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AUTHOR	Berkey, Arthur L.; And Others
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ABSTRACT

This final report summarizes Phase II of the study of employment demand data for agriculture/agribusiness in New York State. Analysis, procedures, findings, recommendations, and products of the study are reported. During Phase II, the final eight months of the study, the data collection was completed; procedures were implemented for conducting telephone interviews of an additional 1,100 non-respondents (both to collect additional data and to determine any differences between respondents and non-respondents). All the survey returns were coded and prepared for computer entry and the data analyzed and interpreted. The final products of the project were prepared and delivered to the sponsor. Questions asked and answered through the study included the following: (1) What kinds of employment demand data should be collected for what time periods? (2) What business areas should be included in the study? (3) How should basic occupational units be defined? (4) What data collection procedures should be used? and (5) What kind of information management system should be developed? Recommendations were made for improved data gathering and analysis as well as for an information management system. Procedures for creating an updating system were proposed and recommended. The appendixes include summary tables giving the employment demand for various agricultural occupations in the state for 1980 and 1982. Other appendixes contain survey forms, sampling procedures, sample tables, and survey procedures. (KC)

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A STUDY OF EMPLOYMENT DEMAND FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE

PHASE II
FINAL REPORT

December 1982

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
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Institute for Occupational Education
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Res. Pub. 81-01

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* * * * *

PREFACE

In order to meet the employment needs of the marketplace current information on employment demand is required by New York State's occupational education planners and administrators at the state, regional and local levels. Phase II of this study is completed and detailed data on the current and projected labor market in New York State agriculture and agribusiness have been provided. An employment demand update system was also developed to conduct periodic follow-ups to the Cornell study.

The Phase I report of this study addressed the issues that emerged as staff located, obtained, validated and managed a large and complex set of data bases in preparation for data analyses as well as the development of the update system. The procedures implemented during this phase were documented in detail.

This project represents the cooperative effort of the State Education Department, the Department of Labor, the Department of Commerce, the College of Agriculture and Life Sciences, and the Cornell Institute for Occupational Education to meet an important need of New York agriculture and agribusiness.

James A. Dunn, Director
Cornell Institute for
Occupational Education

ACKNOWLEDGEMENTS

This final report summarizes Phase II of the study of employment demand data for agriculture/agribusiness in New York State.

This second phase of the study would not have been accomplished without the good work and dedication of project staff. Recognition is due to Beverly Dawson, Karen Dawson, Theresa Delage-Ofner, Katherine Doob, Russell Hodnett, Steven Heller, Karen Kingsbury, Katherine Penrod, Wally Plachta, Phyllis Serignese, William Smith and Helen Taylor-Way. Thanks are also due to the 32 agricultural educators who conducted the telephone interviews of non-respondents.

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Recognition is due to the project Advisory Committee and Task Force members who provided direction to the project and facilitated its many tasks. In particular, the cooperation and assistance of Louis Schisa, Chief of the Bureau of Labor Market Information, DOL, contributed significantly to the project. Harry Doyle of Agway is extended our special gratitude for providing extensive data to the project.

Special thanks are due to the Project Monitor, Lee Traver, Chief of the Bureau of Agricultural Education, SED, for his support in obtaining funding for the study, as well as his help and guidance which greatly facilitated the study.

Thanks are also due to David Call, Dean of the College of Agriculture and Life Sciences (CALS), for providing funding and support for the study. The cooperation of Lucinda Noble, Director of Cooperative Extension, in providing staff time for identification of data sources is also appreciated.

Recognition is also due to the many CALS staff persons who contributed to the study.

G.S.C.
A.L.B.
W.E.D.
R.W.T.

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1. INTRODUCTION

This report covers Phase II, the final phase, of the Cornell study on employment demand in agriculture/agribusiness for New York State. Analysis procedures, findings, recommendations, and products of the study are reported here.

The Phase I final report[1] described the procedures that were developed to conduct the initial part of the study.

OVERVIEW

The Cornell employment demand study was targeted primarily to the educational program planner responsible for providing educational programs to persons who are preparing to take positions in the agriculture/agribusiness industry. This twenty-two month study was conducted in two phases. During the first fourteen months (Phase (1), the following determinations were made: the selection of business areas to study; the data sources for acquiring employment demand data; the sampling procedures, survey and interview formats to be used; and the kinds of computerized data files to be created. Procedures to implement these research decisions were then developed and used to collect employment demand data using mailed surveys, telephone interviews, and other existing data sources.

During Phase II, the final eight months of the study, the data collection was completed; procedures were implemented for conducting telephone interviews of an additional 1100 non-respondents, both to collect additional data and to determine any differences between respondents and non-respondents. All the survey returns were coded and prepared for computer entry and the data analyzed and interpreted. The final products of the project were prepared and delivered to the sponsor.

LITERATURE REVIEW

Agriculture/agribusiness is a major industry in the United States as evidenced by food exports of over 30 billion dollars in 1980. In New York State agriculture/agribusiness represents the single largest industry in terms of dollar value of goods and services produced. Comprehensive employment demand data are needed for educational program planning if vocational programs are to meet the industry's need for a competent workforce.

A review of the literature was conducted to assess the state-of-the-art on the following issues:

(1) The need to identify a comprehensive list of job titles and business areas relevant to the agriculture/agribusiness industry in New York State.

(2) The identification of methodologies, with which to generate useful employment demand data, that were transferable to a New York State study.

(3) The identification of immediate and long range employment needs of the marketplace.

(4) The determination of emerging and obsolescing occupations and professions, including the impact of technological change.

(5) The identification of relevant industries moving into and out of the state.

(6) The ability to locate shifts in types of clientele that given industries may serve in response to economic or other factors. For example, the insurance division of Agway's northeastern branch now serves nonfarm clients and no longer requires a majority of its employees to possess agricultural competencies.

(7) The identification of the changing knowledge and skills that may characterize ongoing occupations. For example, more and more dairy farm operations are computerized and the effective manager or owner/operator needs programming skills.

The literature review revealed that only part of these information needs has been met as the various parts of an Occupational Information System (OIS) are being developed in response to a mandate of the Vocational Education Amendments of 1976. The OIS is to provide supply and demand data to various federal and state sectors including occupational education. One envisioned outcome of the OIS is the provision of employment demand data in sufficient detail to assist with the educational program planning that provides an adequate supply of trained workers to meet industrial demand. The same amendments created NOICC (National Occupational Information Coordinating Committee) to provide the leadership for the development of an OIS by working with the SOICC (State Occupational Information Coordinating Committee) in each state.

Part of the supply data is intended to be made available through VEDS (Vocational Education Data System) which aggregates data collected from all the states by OE program codes. The National Center for Education Statistics (NCES) is responsible for this task.

The literature review reveals that a number of efforts have been underway to supply current and projected employment demand data as a prerequisite to planning educational programs in agriculture/agribusiness. Serious efforts at the federal and state levels have been undertaken by the Bureau of Labor Statistics (BLS) of the Department of Labor and by NOICC and the SOICCs to meet this need for data. Under the direction of Marcus Einstein, staff in the BLS prepared and field-tested techniques to compile demand data for agriculture/agribusiness occupations from the state files maintained by State Employment Security Agencies. However, these data are "on number of workers in selected occupations for 1974 with projections for 1985."2 The national projections on agribusiness jobs developed by BLS, and a set of procedures for developing similar projections for states, were sent to the SOICC directors by the executive director of the NOICC. Assistance from the SOICCS was requested to develop state tabulations with the help of vocational education staffs.3

The NOICC had "adopted the Occupational Employment Statistics Program (OES) of the U. S. Department of Labor as the standard principal source of current and projected employment demand data at the local, state, and national level."4 The OES develops demand data on current and projected need for occupations by industry. Demand projections for five and ten years ahead are done using the OES I/O (Industrial/Occupational) Matrix. Projections are provided by applying economic factor assumptions to a matrix of current demand data in each of the cells of the I/C matrix. However, the OES survey--presently the most sophisticated, timely and comprehensive survey of employment demand data extant--does not include onfarm information. The NOICC funded A Study of the Issues Related to the Collection of Occupational Employment Data in Agriculture to address the problems of collecting such data and to make recommendations for acquiring relevant information. Paige Birdall, who conducted the study, limited it to the issues concerned with "occupational data on farm employment," particularly "SIC 01 and 02, Agricultural Production, Crops and Livestock, and SIC 07, Agricultural Services.[5]" Many of the problems she identified in this study apply to other SICs as well; namely, that many SIC codes do not specify the business areas they subsume even though the types of jobs for each business area may be very different.

Despite the considerable data yield presently available from the OES, there are still many unresolved problems. A major problem is the limited number of occupations assigned to agribusiness. The occupations selected by the National Committee on Employment Opportunities in Agriculture and Agribusiness[6] (a federal interdepartmental committee representing the U. S. Department of Agriculture, the Department of Labor and the Department of Education) is too limited. The list was insufficient as a source for the identification of job titles applicable to New York State. Of further concern is that there seems to be no provision for updating or expanding the list. The changing nature of the agriculture/agribusiness industry, a characteristic to which educational program planning must be responsive, requires timely information on job titles in current use. Yet, the time and expense required for updating Committee developed lists are considerable. Thus, there appears to be no valid mechanism available for developing and updating a comprehensive and current list of job titles used in agriculture/agribusiness.

The literature review also revealed that at least 28 states had conducted 52 studies of agriculture/agribusiness employment demand since 1970 in response to the need for employment data consistent with the information requirements of effective educational program planning. The problems inherent in defining appropriate business areas, job titles, and data sources were not resolved in these studies in ways that are transferable from one state to another. The development of the Occupational and Educational Code Crosswalk[7] is the most comprehensive effort to date that addresses these issues. But the Crosswalk is not yet at the state where it contains information on an extensive enough list of occupations to be used in comprehensive program planning for relevant instructional program codes. Not presently available is a fully developed crosswalk to solve the problems involved in using non-compatible classifications of occupations and industries. The Crosswalk uses SOC (Standard Occupational Classification) codes which are not currently used. It was intended that the 1980 Census of Population[8] would use SOC codes. However, this did not happen. At present, the SOC Manual has limitations when used to classify jobs. The same job title may be classified under two different SOC codes; or one SOC code may contain "overlaps in the coding system. An example is code 5617 which includes dairy workers, poultry workers, and most livestock handlers."[9] The Crosswalk also uses three-digit DOT industrial codes which correlate poorly with the more highly differentiated four-digit SIC (Standard Industrial Classification) codes. The SIC codes are presently the only industrial code index to the ES202 file (unemployment insurance file of the U. S. Department of Commerce), an extensive data source stratifiable by employee size. Another incompatibility is that many of the job titles listed in the Crosswalk have DOT (Dictionary of Occupational Titles) numbers but do not have OES codes so that the OES matrix can not be used to develop projections for these job titles. Further, the USOE codes with which the job titles are identified were replaced in February, 1981 with new instructional program codes. While the Crosswalk designers were aware that the new codes were under development, there has not been enough time to develop a conversion table for the two coding systems. However, the Cornell project was directed by its sponsor to use the February 1981 Classification of Instructional Programs 10 provided by the National Center for Education Statistics.

Another problem emerged when the fairly large list of job titles collected from the literature review did not correspond to DOT titles. Therefore, there were no assignable DOT numbers. A compatible coding system needed to be developed so that all job titles could be referenced and indexed in the same way.

None of the studies reviewed had identifiable procedures for determining emerging or obsolescing occupations, identifying industrial interstate mobility, or shifts in types of clientele; nor were the resources available to the Cornell study sufficient to develop such procedures.

Only one study, that from Arizona, addressed the question of developing an update system, a component included in the Cornell study.

Finally, those studies which conducted employer surveys faced the problem of a lack of identified employer address lists in many areas of agriculture/agribusiness.

A summary of the components included in the final reports of the 52 studies reviewed for the years 1970 to 1980 is shown in Figure 1. The data in the figure indicate the wide diversity in scope and approach used for employment demand studies of agriculture/agribusiness during this period.

Figure One

SUMMARY CHART: EMPLOYMENT DEMAND STUDIES BY STATE AND YEAR USING SELECTED CRITERIA

KEY

SAMPLING PROCEDURE

TU - Total Universe
RS - Random Sample
SS - Stratified Sample
CS - Cluster Stratified Sample
PR - Projections
US - Unclear Sampling Technique

USE OF CODES

USOE - U.S. Office of Education
DOT - Dictionary of Occupational Titles
SIC - Standard Industrial Classifications
SOC - Standard Occupational Code
IPC - Instructional Program Code
CC - Occupational Cluster
LS - Bureau of Labor Statistics
CS - Census Code
IM - Industrial Matrix
NA - Not Applicable

DATA COLLECTION PROCEDURE

MS - Mail Survey
UI - Unspecified Interview
PI - Personal Interview
TI - Telephone Interview
ED - Existing Data
DP - Data Projections

PROGRAM AREAS

A - Agricultural Production
S - Agricultural Sales & Service
M - Agricultural Mechanics
H - Horticulture
F - Forestry
R - Agricultural Resources
P - Agricultural Products
B - Agribusiness
O - Other
NG - Not Given

DATA BASE(S)

AC - Agricultural Census
AT - Agriculture Teachers
AM - Department of Agriculture and Markets
UI - Unemployment Insurance
EA - Agricultural Extension
CU - Colleges and Universities
LS - Labor Statistics
YP - Yellow Pages
TP - Trade and Professional
PS - Previous Surveys
EC - Department of Environmental Conservation
CP - Census of Population
US - U.S. Department of Agriculture
PR - Projections
ED - Existing Data
OS - Other Sources
NG - Not Given

Components of Employment Demand from: A STATE OF THE ART REVIEW OF EMPLOYMENT DEMAND STUDIES IN AGRICULTURE/AGRIBUSINESS by Theresa Delage-Ofner and William M. Smith, Agriculture and Occupational Education Program, Department of Education, Cornell University. Ithaca. December 1981.

SUMMARY CHART: EMPLOYMENT DEMAND STUDIES BY STATE AND YEAR USING SELECTED CRITERIA

REVIEW CRITERIA

STATE AND DATE OF STUDY	PURPOSE/OBJECTIVES	LITERATURE REVIEW	PROGRAM AREA(S)	DATA BASE(S)	SAMPLING PROCEDURE	DESCRIPTION/SAMPLE INSTRUMENT	USE OF JOB TITLES	USE OF CODE(S)	LEVEL OF COMPETENCY	WAGE/SALARY INFORMATION	DATA COLLECTION PROCEDURE	DESCRIPTION OF DATA ANALYSIS	SUMMARIZATION OF DATA	METHOD OF DISSEMINATION	CONCLUSIONS/ RECOMMENDATIONS	PROBLEMS/ LIMITATIONS	BIBLIOGRAPHY
Alabama 1. 1978	Yes	No	B	PS	TU	No	No	NO	Yes	No	UI	No	Yes	No	No	No	No
Arizona 1. 1979	Yes	Yes	A,S,M H,R	PS	RS	No	Yes	No	No	No	UI	No	Yes	No	No	No	Yes
2. 1974	Yes	Yes	A,S,M H,R	PS	RS	Yes	Yes	No	Yes	Yes	TI	Yes	Yes	No	Yes	No	Yes
3. 1973	Yes	Yes	A.H,M S,A	AT,OS	TU	No	Yes	USOE	Yes	Yes	UI	Yes	Yes	No	Yes	Yes	Yes
California 1. 1979	Yes	No	A,S,B,M P,H,F,R	EA,YP OS	RS	Yes	Yes	DOT	Yes	Yes	PI	Yes	Yes	No	Yes	No	Yes
2. 1971	Yes	No	NG	NG	US	No	No	No	No	No	PM,MS ED	No	Yes	No	Yes	No	No
Colorado 1. 1981	Yes	Yes	A,S,M F,B,H R,P,O	UI, TP	SS	Yes	Yes	SIC SOC	No	Yes	PI	Yes	Yes	Yes	Yes	Yes	Yes
Connecticut 1. 1974	Yes	Yes	A,S,M,P H,R,F,O	AT,EA US,CU YP,AC OS	RS	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	Yes	Yes	Yes	Yes
Florida 1. 1973	Yes	No	A,S,M,P H,R,F	NG	RS	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	Yes	No	No	No
2. 1971	Yes	No	H,F,A M,P,O	UI,OS	RS	No	No	SIC	No	No	MS,PI	Yes	No	Yes	No	No	No
Georgia 1. 1964	Yes	No	A	AC,OS	PR	No	No	No	Yes	Yes	ED	Yes	Yes	No	Yes	Yes	Yes
Illinois 1. 1966	Yes	No	O	YP	SS	No	Yes	No	Yes	No	UI	Yes	Yes	No	No	No	No
2. 1962	Yes	No	NG	YP,OS	CS	No	No	No	Yes	No	PI	Yes	Yes	No	Yes	No	
Indiana 1. 1977	Yes	Yes	P,M,S,A H,F,R	UI	SS	Yes	Yes	SIC	Yes	No	MS,TI	Yes	Yes	No	Yes	No	No
Kansas 1. undated	Yes	No	M,S,P	OS	SS	No	Yes	No	Yes	Yes	UI	Yes	Yes	No	Yes	No	No
Louisiana 1. 1965	Yes	No	M,S,F,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	No	Yes	No	No
2. 1965	Yes	No	M,S,F,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	UI	Yes	Yes	No	Yes	No	No
3. 1965	Yes	No	M.S.F,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	No	Yes	No	No
4. 1965	Yes	No	M.S.A,H P,R,A	UI,TP YP,OS	TU	Yes	Yes	No	Yes	Yes	PI	Yes	Yes	No	Yes	No	No
Maryland 1. 1979	No	No	A,S,M H,O	NG	NG	Yes	No	No	No	No	UI	Yes	Yes	No	No	No	No
Michigan 1. 1970	Yes	No	A,S,H,R	YP	US	Yes	Yes	No	Yes	No	PI	Yes	Yes	Yes	Yes	No	No
2. 1965	Yes	No	NG	TP,OS	US	Yes	No	No	Yes	Yes	MS	No	Yes	No	Yes	Yes	No
Minnesota 1. 1973	Yes	No	A,M,S H,R,P	AT,CU	TU	Yes	No	No	Yes	No	UI	Yes	Yes	No	No	No	No
Missouri 1. 1977	No	No	NG	NG	TU	No	Yes	USOE SIC CC	No	No	ED	Yes	Yes	No	No	Yes	No
Montana 1. 1979	Yes	No	S,M,H R,P,F	PS,OS	TU	Yes	Yes		Yes	Yes	MS	Yes	Yes	No	Yes	Yes	No

SUMMARY CHART: EMPLOYMENT DEMAND STUDIES BY STATE AND YEAR USING SELECTED CRITERIA

STATE AND DATE OF STUDY	REVIEW CRITERIA																
	PURPOSE/OBJECTIVES	LITERATURE REVIEW	PROGRAM AREA(S)	DATA BASE(S)	SAMPLING PROCEDURE	DESCRIPTION/SAMPLE INSTRUMENT	USE OF JOB TITLES	USE OF CODE(S)	LEVEL OF COMPETENCY	WAGE/SALARY INFORMATION	DATA COLLECTION PROCEDURE	DESCRIPTION OF DATA ANALYSIS	SUMMARIZATION OF DATA	METHOD OF DISSEMINATION	CONCLUSIONS/ RECOMMENDATIONS	PROBLEMS/ LIMITATIONS	BIBLIOGRAPHY
New Jersey 1. 1968	Yes	No	A,P	EA,AC OS	US	No	No	No	No	Yes	MS,PE	No	Yes	No	Yes	No	No
New York 1. 1981	Yes	Yes	A,H,M F,R,P S,O	VI,EA,PS TP,AC,EC YP,AM,CU OS	TU SS	Yes	Yes	SIC DOT IPC	Yes	No	PI,MS TI,ED	Yes	Yes	Yes	Yes	Yes	Yes
2. 1979	No	No	M	TP	US	No	No	No	No	No		Yes	Yes	Yes	No	Yes	No
3. 1974	Yes	No	S	PS,EA AM,OS	RS	Yes	No	No	No	No	PI	No	Yes	No	No	No	No
4. 1971	Yes	No	A,S,P M,H,O	YP,EA TP,AT OS	US	No	No	USOE	No	No	TI,PI	No	Yes	Yes	Yes	Yes	No
5. 1968	Yes	Yes	H,S,F M,O	PS,UI,OS	SS	Yes	Yes	SIC DOT	Yes	No	MS,TI	Yes	Yes	No	Yes	Yes	No
6. 1965	Yes	Yes	M,S,A, F,H,O	YP,AT PS,OS	SS	Yes	Yes	DOT	Yes	No	UI	No	Yes	No	Yes	Yes	No
North Carolina 1. 1962	Yes	Yes	P,O	ED,AC,OS	PR	Yes	No	No	No	No	PR	Yes	Yes	No	No	Yes	No
Nevada 1. 1968	Yes	Yes	R,P,H M,O	NG	US	No	No	No	Yes	No	PI	Yes	Yes	No	Yes	Yes	Yes
Ohio 1. 1974	Yes	Yes	A,S,M, D,P,H,R	UI,ED,OS	US	No	No		No	No	PR	Yes	Yes	Yes	Yes	No	No
2. 1963	Yes	No	NC	NG	US	No	No	No	No	No		No	No	No	No	No	No
Oklahoma 1. 1980	Yes	No	A,S,P H,R,F	LS,UI,OS	US	No	Yes	DOT SIC	Yes	No	DP	No	Yes	No	No	Yes	No
2. undated	Yes	No	M,A,H S,P	AT,OS	US	No	Yes	No	Yes	No	PI	Yes	Yes	Yes	Yes	Yes	No
Oregon 1.	No	No	NG	NG	US	Yes	Yes	LS USOE	No	No	MS	No	Yes	No	No	No	No
Pennsylvania 1. 1965	Yes	No	M,S,A F,H,R	AT,EA,AC TP,OS	US	Yes	Yes	SIC	Yes	Yes	ED,PI	No	Yes	No	No	No	No
Texas 1. 1979	Yes	Yes	M,H	CP,TP	TU	Yes	Yes	CS USOE	Yes	No	MS,TI	Yes	Yes	No	Yes	Yes	Yes
2. 1973	Yes	No	A,S,H F,M,O	DA,AC,TP LS,PS	US	Yes	Yes	CS	Yes	No	PI	Yes	Yes	Yes	Yes	Yes	Yes
Washington 1. 1959	Yes	No	O	OS	SS	Yes	No	No	Yes	Yes	UI	No	Yes	No	Yes	No	No
Wisconsin 1. 1976	Yes	Yes	A,P,M S,H,R	PS,AC UI,OS	US	No	Yes	CS	No	No	UI	Yes	Yes	No	Yes	Yes	No
NATIONAL MANPOWER STUDIES																	
1. 1980	Yes	No	A,S,M P,H,F R,O	AC,LS ED,UI	US	No	No	DOT SOC IM	No	No	DP	No	Yes	No	No	No	Yes
2. 1980	Yes	No	O	TP,YP,OS	US	Yes	No	No	Yes	Yes	MS	Yes	Yes	No	No	No	Yes
3. 1978	Yes	No	O	TP,YP,OS	US	Yes	No	No	Yes	Yes	MS	Yes	Yes	No	No	No	Yes
4. 1978	Yes	No	NG	NG	TU	Yes	NA	NA	Yes	No	MS,TI	No	Yes	No	Yes	Yes	No
5. 1974	Yes	No	A,S,H, F,O	AC,DA,OS	US	Yes	Yes	Yes	No	No	MS	No	Yes	No	No	Yes	No

2. METHODOLOGY

The methodology developed for the Cornell study resulted from a consideration of the following questions:

1. What kinds of employment demand data should be collected for what time periods?
2. What business areas should be included in the study?
3. How should basic occupational units be defined in order to collect, store and report data?
4. What data collection procedures should be used to collect data from the respective business areas selected for the study?
5. What kind of information management system should be developed to receive, store, access, manipulate, analyze and format data for reporting to users?

The research procedures developed in response to these questions are presented below. Each of the five sections considers the circumstances and factors that influenced decisions, and the limitations and advantages of each of the selected procedures when applicable.

The study's Phase I report[11] describes in detail the procedures used to locate, obtain, validate and manage the large and complex data bases that were developed to produce the study's data reports and tables. This section highlights the significant issues that had to be considered in order to develop the methodology.

1. WHAT KINDS OF EMPLOYMENT DEMAND DATA SHOULD BE COLLECTED FOR WHAT TIME PERIODS?

In order to determine the kinds of information needed on employment demand in agriculture/agribusiness, it was first necessary to specify the target audiences who would use such information and determine their information needs. An additional factor to consider was how to interface effectively with the New York State Department of Labor's reporting formats, and with the OIS under development by NOICC and the SOICCs.

Target Audience for Project Data. Working with the study's advisory committee which included the sponsor of the study, it was determined that the primary users of the project's data were educational planners who provide agricultural education programs at the state and local levels. Representatives of this audience worked with the Cornell study's staff and determined both optimal and minimal information needs. Other factors which were to affect the selection of data items included:

- the reliability of such information from the selected data sources
- how such information could be collected (see question 4 for discussion of this factor)
- the amount of time and costs needed to collect such data items.

Types of Data and Time Periods. The literature review, as well as information from the advisory committee, indicated that data collected from employers had limited reliability on items such as:

- hiring practices
- wages paid
- training, promotion and lateral movement policies within businesses
- job descriptions
- age and sex data

Dubinsky[12] stated that the efforts to collect such information "were tried in the past without too much success." Therefore, the Cornell staff elected to omit these data items from the study. Dubinsky further reported that the ability of employers to forecast their long-range employment needs was considered unreliable in studies conducted by the Bureau of Labor Statistics and other researchers. This finding held for projections three or more years ahead. Since short-term forecasting had higher reliability, project staff decided to ask employers for data on number of positions for the past year (1980) and the number of positions anticipated for the following year (1982). This would provide data with a three year spread. Employer reliability was also low on projections for numbers of openings. Staff therefore decided to collect information only on the number of openings for the previous year. After pilot testing survey forms, it was also determined that respondent burden would be reasonably low on information collected for year-round and seasonal employment classified by full-time and part-time positions, if the reporting format were simple, easy to read, and attractive. Additionally, a need had been expressed by educational planners, through the study's advisory committee, to find out how many persons in the workforce constituted unpaid family labor, a category likely to occur in small firms using family members as workers (see instrument in Appendix F of Phase I Final Report).

New York State is divided into 13 educational planning regions and another need met by the study was to aggregate data by the 13 educational planning regions as well as statewide.

OIS Interface. Given the state-of-the-art of the OIS, staff decided that whatever categorial job unit was finally selected for data collection, that unit should be coded at least by DOT numbers, SIC codes, and instructional program codes. Project staff working with the advisory committee also determined that the reporting categories presently used by the OES I/O Matrix to identify categories of jobs were not sufficiently differentiated for program planning purposes. A further concern was that, for a given occupation, many of the industries included in the I/O Matrix would not be included in the Cornell study. Thus, data from the I/O Matrix would not be comparable to that of the Cornell study.

2. WHAT BUSINESS AREAS SHOULD BE INCLUDED IN THE STUDY?

Given the wide range of industries that have jobs requiring agriculture/agribusiness skills, the approach used in the Cornell study was first to determine which jobs required agriculture/agribusiness competencies. The second step was to determine in which business areas the jobs occurred, and the third step was to decide which business areas were to be included in the study, given the study's available resources.

There were at least three different kinds of nomenclatures to consider when the study staff tackled this problem. First of all, what did the firms themselves call their types of businesses? Secondly, how did the two systems for classifying industrial areas differ: the SIC four-digit codes and the DOT three digit industrial codes? With further investigation, it was found that the SIC codes had the greatest utility as they could be used to access the ES 202 files for employer names. A further advantage was that SIC codes were more differentiated than DOT codes and thus came closer to the labels used by employers. Furthermore, employers were accustomed to SIC codes since they filed quarterly unemployment insurance reports using the SIC codes assigned to them by the Department of Commerce.

For step one, determining which jobs required agriculture/agribusiness skills, a number of data sources were consulted. The primary one was the fourth edition of the DOT (Dictionary of Occupational Titles.) Additional sources were state and national studies of employment demand in agriculture/agribusiness. More than 2,700 job titles were identified as candidates for inclusion in the study (see Phase I Final Report, pp. 12-14). Each job title was assigned a nine-digit occupational code number from the DOT. If none were found that applied, a fictive DOT number was developed and assigned by project staff. These fictive numbers, based on the DOT classification schema, are referred to as "dummy" numbers throughout the study's reports.

For step two, determining in which business areas the job titles occurred, a two-step process was used. First, every job title was assigned all applicable three-digit industrial DOT codes based on the industrial title listed next to the nine-digit DOT occupational code. Using a DOT to SIC conversion table[11], the three digit SIC codes were converted into the more highly differentiated four-digit SIC codes. This meant that one DOT code might map into two or three SIC codes. If there were two or more DOT codes involved, there could be two to six SIC codes assigned. These four-digit codes then became the basis for selecting the business areas included in the study.

The initial selection of business areas was based on a model of stages of operations (resulting in a change in the product), with production agriculture (including natural resources and animal care) considered Stage 0 (see Phase I report, pp. 18-20). Given the study's resources, it was decided that business areas occurring in Stage 0 and I of the model would be included in the study. Stage I operations have the most immediate relationship to production agriculture. That is, business areas are included which (a) directly supply goods or services to production agriculture (e.g., retail farm machinery dealerships) or (b) directly process or distribute the products of production agriculture (e.g., meat processing plants or saw mills.) Such business areas generally contain a higher percentage of jobs requiring agriculture/agribusiness skills.

The final selection of business areas for the study was based on the availability of a data source either for collecting employment demand information directly, or defining a population from which to collect data. If none could be found then that business area was excluded.

3. HOW SHOULD BASIC OCCUPATIONAL UNITS BE DEFINED IN ORDER TO COLLECT AND REPORT EMPLOYMENT DEMAND DATA?

Before data collection could begin, a decision was needed on what kind of unit to use for collecting, storing and reporting data. A major concern was how to reflect the reality of the job market and still be responsive to educational program planning needs. Employers hire persons to perform jobs but agricultural education programs teach for sets of skills usable across a wide range of occupations. Further, the skills taught in the classroom were often derived from task analyses which correlate with performance-based objectives rather than job titles. Since employment data would be collected from employers, the terminology used would have to be consistent with that used in the workplace. These considerations led to a further concern that the categories to be chosen minimize the re-indexing of units from the specifics of employer uses (market place labels) to the different categories of planning uses (education labels).

As stated earlier, it was clear from the literature review that the categories used in the OES matrix were not of sufficient applicability for the levels of detail considered necessary in the Cornell study.

Specific problems that were identified were:

- Often job titles with different names were alternates for each other.
- Many job titles were not listed in the fourth edition of the DOT.
- The same DOT number was used for job titles occurring in different business areas even though the tasks were not comparable from business area to business area.
- Some corporations had a number of different business areas.

It became clear that a given job title was not going to be a useful unit for organizing, collecting or storing data. It also became obvious that a DOT number alone was not enough to differentiate among alternate or similar job titles. However, a DOT number linked to an SIC code did uniquely identify an occupational unit, namely one or more similar jobs that occurred in one business area. Further, the DOT is presently the most comprehensive and exhaustive taxonomy of occupations available, therefore it was more economical to use its classifications than to develop another one. In addition, its coding schema is being used by the NOICC Crosswalk and by DOL statistical analysis units; thus using DOT codes would provide compatibility with other data collection mechanisms.

The following decisions were made to resolve the identified concerns:

- The basic occupational unit was defined as a combination of two codes: one nine-digit DOT number plus one four-digit SIC code.

- When a DOT number could not be located for a given job title, staff would define a fictive nine-digit DOT number compatible with DOT number assignments in the fourth edition of the DOT. Such a fictive number would be called a "dummy number."
- Instructional program codes would be assigned to a basic occupational unit, the DOT number plus the SIC code.
- Job titles would be assigned to a basic occupational unit (DOT + SIC codes). Thus, a basic occupational unit could have more than one job title, each of which was considered an alternate of the other.
- If a business firm conducted operations in more than one business area to which an SIC code was assignable, each SIC code assignment would be treated as a separate 'employer.'

One effect of these decisions was to create a computerized basic occupational units file which linked together as variables a DOT nine-digit number, job title names, SIC codes and instructional program codes. Information could now be arrayed in different formats organized by any one of the variables. Thus, job titles could be ordered by SIC codes, by instructional program codes, by DOT numbers or alphabetically or numerically.

Another consequence of these decisions was the storage of all collected data by DOT + SIC code. Any newly acquired titles were added to the basic occupational units file only.

The basic occupational unit defined by this study is more inclusive than a single job title but less inclusive than a cluster of jobs organized around a set of task analyses. Since the purpose of this study is to provide useful employment demand data for educational program planning, it was imperative that some solution be devised to reflect a relationship between job titles used by employers (marketplace labels) and occupational categories used by program planners (education labels). This is not a simple issue. On the one hand, data as gross as aggregations by instructional program level may be sufficient for such uses as State Plan reporting or large scale programmatic issues of program maintenance, expansion or reduction; but, fine-grained data reflecting task analyses for jobs or job clusters is needed to update curricula or to change curricular emphases. The solution arrived at in the Cornell study meets the first need and also provides data which can be used as indicators for the second requirement.

A third consequence of these decisions is that each mailed survey form was treated as a separate respondent, so that a single corporation engaging in two or more business areas (i.e., was classifiable by two or more SIC codes) was treated as more than one respondent.

4. WHAT DATA COLLECTION PROCEDURES SHOULD BE USED TO COLLECT DATA FROM THE RESPECTIVE BUSINESS AREAS SELECTED FOR THE STUDY?

Two factors affected the selection of data collection procedures:

(a) the identification and accessibility of appropriate data sources, and (b) the identification of appropriate populations from such data sources for each of the 13 educational planning regions in New York State.

Six major types of data sources were identified, each requiring differing data collection procedures. These were:

o The ES 202 tapes (unemployment insurance) at the Department of Commerce. These tapes contain the names and addresses of firms linked to county codes and SIC codes. In addition, employee size of firm is also stored with the names and addresses. These tapes are also updated frequently since data submitted by firms for study were accessible through the ES 202 tapes, and accession data concerning all the firms (their names, addresses, county codes and SIC codes) could be read directly into a computer file without any manual manipulation. A further advantage was that universes stratified by educational planning region could easily be specified for the business areas covered by the ES 202 tapes. It was a fairly simple matter to write a computer program which transformed county codes into educational planning region codes.

When it was determined that employment demand data for the SIC codes covered in the ES 202 tapes were not available directly from any existing data base, the study staff decided to conduct a mail survey of the firms linked to the selected SIC codes. It was also decided to survey the total populations for each SIC code since the universe sizes for each were fairly small.

When it was determined that most of the data would have to be collected from employers, survey forms were developed for 68 business areas. Each survey form contained a unique list of job titles. Each job title was identified by a DOT number and each type of survey form was identified by an SIC code. Survey forms were also printed without job titles or SIC codes. These forms or lines permitted employers to write in any other titles that were used in their businesses. The business areas surveyed and the job titles used in each are listed in Appendix E of the study's Phase I final report. Appendix F of the same report contains a sample questionnaire.

Computer assigned accession numbers were linked to every firm within our computer file. Mailing labels were then printed out by computer and each label contained the name and address of the firm, an accession number and an SIC code. When data from the returned forms were to be entered in the computer, all that would be necessary to link the return to the name and address of the firm would be the accession number. This procedure was designed to reduce the number of keystrokes needed for data entry, whether keypunch or key-to-disc. In this manner, the accession number plus the SIC code uniquely identified every respondent. When the same business firm conducted business in more than one business area for which there was a unique SIC code, each of those business areas received a questionnaire appropriate to it and each form was treated as a separate response. Thus, if a firm ran a fluid milk operation (SIC # 2026), a creamery butter making operation (SIC # 2021), and a natural and processed cheese operation (SIC # 2022), each one was treated as a separate respondent. Each of the survey forms was different and in most cases the locations of each of the operations were different. Since the ES 202 tapes treated each of the operations as separate businesses, it was less complicated for the study to treat them in the same way, as each one was a separate cost center for the same corporation.

Limitations of the ES 202 tapes include: the inclusion of non-agriculture/agribusiness business areas within certain SIC codes (see (1) above for discussion of business areas and SIC codes); the non-updating of SIC code assignments to business firms (which meant that some firms had changed their type of business and were, therefore, incorrectly included in a given SIC); and the non-inclusion of businesses which use only family members as non-paid employees (and thus, exclude the numerous "mom and pop" businesses in many areas of agriculture/agribusiness.)

- Trade and professional association membership lists, and directories produced by previous studies. These data sources could provide the names and addresses for another 43% of the business areas included in the study. Directories were available for the logging industry, the meat packing industry and the dairy industry. There were a number of limitations in the use of this type of data source including:

  (a) The non-differentiation between commercial firms and private individuals with special interests. Thus, each list required a manual review. However, in many cases, the reviewer could not determine if the name and address belonged to a commercial firm or not, and it was included in the survey population. This issue was handled during the processing of survey returns. Such a return was coded to indicate its non-applicability. The total for all such forms was subtracted from the total population.

  (b) The age of the list or directory. Some directories were as much as four or five years old and therefore could include firms that were no longer in business. The logging industry, in particular, has a high turnover. Over 40% of the firms in this directory were no longer at the addresses listed and could not be located.

  (c) The addresses did not include county designations. A computer program had to be written to match city and town names with county codes and educational planning regions.

  (d) Directory listings were not available on computer tape. This meant that thousands of listings had to be entered into our computer files at a keyboard, the printouts edited, and changes reentered and reedited. This operation was labor-intensive, since it involved not only verifying the names and addresses of the firms but their SIC code designations as well.

- Public sector lists of professionals, public agency personnel offices, and public agency licensing data. Lists of types and numbers of educators were made available by the State Education

Department's Bureau of Agricultural Education and from the SUNY system. Numbers of cooperative extension agents and other personnel were made available from the Cooperative Extension office at Cornell University. Lists of licenses such as those for veterinarians, land surveyors, landscape architects and animal health technicians were made available from the Division of Professional Licensing Services of the New York State Education Department, and numbers of licenses for fisher occupations were made available by the Department of Environmental Conservation. The advantage in using these data sources is the direct accessibility to the desired data. The limitations, however, included:

(a) The non-differentiation on the lists of the business areas in which a given job title might occur. For example, the lists of licensed veterinarians did not distinguish between SIC code 0741, "Veterinary Services for Livestock," and 0742, "Veterinary Services for Animal Specialties." Since these two SIC codes were included in the ES 202 tapes these firms were surveyable through the latter source. Those lists for which job titles were not assignable to SIC codes could not be used in the survey.

(b) The inability to distinguish between commercial and noncommercial licenses for many of the fisher occupations. The licenses for oyster, clam and lobster fishers did not differentiate among those who fished commercially and those who did not. Staff of the Department of Environmental Conservation gave us estimates based on their data concerning yields compared to the numbers of licenses issued.

Data from these sources were collected by educational planning region and entered directly into the computerized data files. Each of the types of data were assigned to SIC codes and to DOT numbers linked to job titles.

o The 1978 Census of Agriculture. New York State data were available from the Agricultural Census as hard copy interim reports. At the time data were being collected, the computer tapes of the Agricultural Census were not accessible through the Cornell computer facility. Census data were not available at the level of detail desired for the study. For example, data by job titles were not differentiated either for type of farm (to match SIC codes) or by type of job on the farm. All positions were subsumed under 'operators' and 'hired workers.' The Census data provided no information on openings and could not be used to develop projections comparable to 1982 projected data. However, project staff decided to use the available Census data for production agriculture positions since it would have been too costly to survey farms for employment demand data as well as agribusiness firms.

o Agway, one of the largest agribusiness employers in the State, provided the study staff with a computer tape containing numbers of employees by type of job for all their locations in New York State. Information on which jobs required agricultural competencies was also provided. Project staff assigned DOT numbers to

Agway job titles, and assigned educational planning regions to Agway locations. These data were then read into the study's computerized file and merged with the other collected data. This resulted in anonymity for this employer.

A major limitation in using a source such as Agway, is that their own information is not linked to either DOT numbers or SIC codes, so that considerable Agway staff time was required to provide usable data. In addition, much Cornell staff time was required to code the data to make it compatible with the study's coding system. Agway was very cooperative. Their personnel director supported the objectives of the study. However, it is not clear that any other large businesses would be willing to give so much of their time and computer capability to meet the data needs of an employment demand study.

o New York State Yellow Pages directories. Five additional business areas selected for the study were not accessible through any data sources other than the Yellow Pages directories. These were pet shops including tropical fish, protective services using trained dogs, dog groomers, boarding kennels and riding academies. None of these animal care services were uniquely identifiable through the ES 202 tapes or through professional or trade associations. In addition, two other business areas were included for which data was also collected from other sources so that a comparison could be made between types of data collection procedures.

A sampling procedure was developed to determine staffing patterns by educational planning region for each of the five business areas. The patterns were then extrapolated to the total populations determined for each educational planning region. See the Update System for a description of the Yellow Pages sampling procedure. This technique seems to be the most promising as a cost-effective procedure for collecting employment demand data. However, the limitations, at present, include:

(a) the inability to access yellow pages information through computerized files. While yellow pages information is currently stored in computer files, such files are not accessible to studies such as this one. Perhaps, the State Education Department could develop an agreement with the New York State telephone companies by working through the Public Services Commission, if such a data collection procedure were considered desirable.

(b) the inability to discount duplicate listings. It was not possible for the study to determine the degree of duplication, either among different directories or within the same directories, by conducting manual searches. If the information had been available on computer, such a search would have been feasible.

(c) some directories overlapped counties. Thus, for some of the data, assignment to a given county was necessarily arbitrary. Again, this type of assignment could have been managed with a computer program but was not feasible using manual techniques.

5. WHAT KIND OF INFORMATION MANAGEMENT SYSTEM SHOULD BE DEVELOPED FOR THE STUDY?

Of central concern was specifying the characteristics of a management information system and its data files to respond flexibly to the functional needs of receiving, storing, accessing, manipulating, aggregating, analyzing and formatting data. The study staff determined that a four part process would be needed: (1) the definition and development of data files; (2) the preparation of data for storage and retrieval in data files; (3) performing operations on the data in the files; and (4) the specification and development of formats for presenting employment demand data in useful displays for intended audiences.

The following objectives were addressed in order to meet these goals:

1. To collect employment demand data on as comprehensive a list of job titles as possible within the resources of the study.
2. To reflect the occupational terminology used by employers.
3. To articulate with existing efforts of the Occupational Information System (OIS) operative at the federal and state levels.
4. To create data files and procedures for the periodic updating of employment demand data.
5. To explore the cost-effectiveness of various forms of data collection procedures.

Definition and development of data files. Four kinds of large data files were developed. The first, a national job titles file, was compiled from the fourth edition of the DOT and from over 60 other state and federal studies conducted since 1970. Initially, more than 2700 job titles were identified that required agriculture/agribusiness skills. This list was then screened for applicability to New York State. Excluded were such jobs as 'secretary,' 'bookkeeper,' and 'computer programmer' since the skills required for each position were secretarial, bookkeeping and programming skills, respectively, rather than agriculture/agribusiness competencies. Each job title is linked to a DOT number, an SIC code and an instructional program code. Additionally, each title that was entered on a survey form by an employer is coded as such.

The second file, the basic occupational units file, contains only those job titles for which data was collected in the study, and is, therefore, a file of job titles used by New York State employers.

The third data file was a file of surveyed employers. The names and addresses of all surveyed firms are in this file linked to SIC codes, county codes, and accession numbers. The development of this file is discussed under question 4.

The fourth data file, the employment demand data file, contains the data collected from all sources. For data from survey respondents, all the information on a given job title is stored by its DOT number linked to the respondent's SIC code and accession number. Thus, a computer record was kept of which firms responded to the survey. Response rates within SIC codes by educational planning region were then determined by computer, and a nonrespondent sampling design was then developed (see Appendix A.)

Data collected from other sources were input in the same format as that used for survey data. Accession numbers were assigned to these inputs as well and have data sources as their values.

Each of these three files was made available as raw data on magnetic tape to the project's primary sponsor, the New York State Education Department.

In addition, two small files were also created. One of these is a list of instructional program codes and their titles that were used in the study. The other is a list of SIC codes used (see Appendix B.)

Preparation of data for storage and retrieval. Each returned survey form was coded for:

(a) Usability. Three types of nonusable data occurred and were coded as follows:

-1 = the firm was not in any of the business areas under study;
-2 = firm was out of business or owner/operator was deceased and firm was no longer in business;
-3 = the data on the return was unclear and a second contact was likely to elicit the desired information.

All forms coded as -1 were subtracted from the population total of which they were a part when extrapolations were developed. All the firms whose forms were coded as -3 received telephone calls from staff. Over 95% of these were able to provide the desired data. The remaining 5% were found to be of the first type and were assigned a -1.

(b) Appropriate DOT number. Many of the returns contained new job title entries and staff then determined if they could be assigned an already existing DOT number. If not, a dummy number was assigned.

(c) Correct SIC code assignment. In many cases, the firm was not doing business in the business area assigned but in a different one. Staff then assigned the correct SIC code.

After the forms were coded, they were batched and keypunched. Each job title had up to thirteen possible data fields linked to it as well as the form's accession number and SIC code. The job title itself was not entered from the survey form. In order to simplify the keypunching, only numeric data were entered. The new job title was entered in the job titles file through another procedure, after all forms had been keypunched. This final procedure also assigned instructional program codes to each job title after evaluating its DOT number and SIC code.

Data in each of the thirteen cells for each basic occupational unit were now retrievable by such variables as SIC code, instructional program code, educational planning region and DOT numbers, as well as by any combination of these. It would be possible to develop matrices with the thirteen data fields forming columns and the combination of variables forming lines. Thus, data for DOT numbers within instructional program codes could be displayed by educational planning region, as were DOT numbers by SIC codes (see Appendix C for a summary table of the data in thirteen cells).

Performing operations on the data files. The first major effort was the development of an extrapolation formula from the survey returns. In order to extrapolate from survey return totals to the total population the following formula was used:

For a given DOT number linked to one SIC code, within an educational planning region:

$$\frac{R_t \times F_t}{F_r} = T_s$$

where for a given cell:

R_t = total number of positions from survey returns

F_t = total number of firms in the population

F_r = total number of firms within the given population that responded

T_s = extrapolated total from survey returns

To arrive at the final total, the totals derived from all other sources for a given data cell were added to T_s.

The second major effort was the generation by computer of nine different kinds of tables. These include:

1. A Summary Report which presents the data by instructional program codes for each of the thirteen educational planning regions and for statewide totals. (See Appendix C.)
2. Table 1: Demand data for job titles by instructional program codes and SIC codes. This table provides data for each of the thirteen planning regions and for the entire state. The printout is over 300 pages.
3. Table 2: A list of job titles by DOT numbers linked to program and SIC codes.
4. Table 3: An alphabetical listing of job titles linked to DOT numbers, and program and SIC codes.
5. Table 4: A list of job titles by SIC codes linked to program codes and DOT numbers.
6. Table 5: The demand data is Table 1 is displayed as percentages for each educational planning region and statewide. The printout is 260 pages.
7. Table 6: The demand data for job titles is presented by SIC codes for each of the thirteen educational planning regions and statewide. This printout is 240 pages.
8. Table 7: A list of the SIC codes used in the study (see Appendix E).
9. Table 8: A list of the instructional program codes used in the study. (See Appendix (E).

The first seven tables required very large sorts and merges of the data. The programs were written in SAS. Table 5 required extensive programming since SAS is limited as to the number of variables it can manipulate to perform a given sort.

Specification of given formats for intended audiences. Three different kinds of audiences were identified as users of the study's data and data files. The first audience consisted of educational planning region planners including those responsible for BOCES, for two-year postsecondary institutions such as the Agricultural and Technical Colleges and other two-year community colleges. The State Education Department's program planners comprised the second audience and other agencies such as the Department of Labor's Bureau of Labor Statistics, NOICC and the SOICCs constituted the third type of audience.

The advisory committee met with staff and it was determined that regional and local planners wanted summary data reports that were brief and easily interpretable. Working with selected members of the committee and State Education Department staff a format was developed and became the display for the Summary Report. This table contains two pages of data for each educational planning region as well as statewide data. It also contains a two-page introduction that briefly describes its contents, lists of additional tables produced by the study, and where these tables are available.

Working with State Education Department staff, the formats for the additional eight tables were defined to meet their information needs. Samples of Tables 1 through 6 are included in Appendix D. Tables 7 and 9 are shown in Appendix E.

For the third audience as well as for other researchers the survey data and job titles files are available on magnetic tape (see Appendix B for a list of files available on tape.) The tape provides ready access by a potential user such as the Department of Labor, for example, to extract dummy number job titles and consider them for inclusino in the DOT. Or, the DOT numbers in the job titles file can be extracted to assign OES codes for inclusion of the study's data in the I/O Matrix presently under development for agriculture/agribusiness.

The national job titles file, containing DOT and SIC code assignments, is also available on magnetic tape to other researchers planning to conduct employment demand studies in agriculture and agribusiness.

3. THE UPDATE SYSTEM

The update system consists of two data bases and a set of procedures for collecting employment demand data periodically to follow-up the Cornell study. The data bases include a basic occupational units file and a collected data file. The former contains all the job titles used by employers in New York State linked to DOT occupational codes, SIC codes, and instructional program codes. The latter file contains all the data collected by the Cornell study linked to DOT numbers, SIC codes, geographic location codes, and accession numbers which can identify the respondent firm. The names and addresses of the respondent firms are in a third file in association with accession numbers.

The update system is designed to provide current employment demand data for educational program planning purposes, including:

1) meeting the New York State Department of Education's employment demand reporting needs for documents such as the State Plan for Vocational Education or the Accountability Report;
2) providing indicators for the maintenance, reduction, expansion or termination of ongoing vocational education programs;
3) providing justification for introducing new programs or introducing new content into programs;
4) providing indicators for updating curricula or changing their emphases;
5) providing indicators on the need to conduct new or additional task analyses which, in turn, can be used to update behavioral objectives for classroom application.

To stay within its resources, the Cornell study was responsive primarily to the first two purposes. However, the mechanisms are in place to respond to the additional purposes listed above, should additional resources be available.

After discussion with members of the study's advisory committee and after a review of the literature was conducted, the update system was developed to meet the following objectives:

1) to collect employment demand data on as comprehensive a list of job titles as possible within the available resources;
2) to reflect the occupational terminology used by employers within the state;
3) to articulate with existing efforts of the OIS operative at the state level;
4) to create data files, and data collection and management procedures that make possible the periodic updating of employment demand information in agriculture/agribusiness;
5) to explore the cost-effectiveness of various data collection procedures for potential users of the update system.

All these objectives were met as the update system was developed. The first two objectives are reflected in the structure and design of the Basic Occupational Units File in which an interface was created between the terminology used by employers and a set of referents required for data collection, management and display. The variables in this file can also be used to articulate with the variables to be used in an OIS.

THE DATA BASES

Two data files are available as raw data on magnetic tape and constitute the data bases of the update system. One is the Basic Occupational Units File and the second is the Collected Data File.

The New York State Basic Occupational Units File.

A concept central to the Cornell study was the definition of a basic occupational unit to be used for collecting, storing, retrieving and formating data. As discussed in detail in the methodology section under question 3, the basic occupational unit was defined as a combination of two codes: an occupational code + an industrial code. The occupational code is the nine-digit DOT code of the fourth edition of the DOT and the industrial code is the four-digit SIC code. Each basic occupational unit has four variables. The first variable is the nine-digit occupational code with its values either fourth edition DOT codes or a fictive "dummy number" consistent with the DOT code. The second variable is the job title name. There can be more than one and each is an alpha string up to 35 characters in length. The third variable is a five character industrial code which has as its values a four character numerical string representing the SIC code and a fifth numerical character representing a business area within the SIC code. There can be more than one SIC code linked to a DOT number. The fourth variable is an instructional program code which is linked to an SIC code for a given DOT number.

From this file can be constructed various arrays such as an alphabetical listing of job titles, a listing of job titles by DOT number, a listing of job titles by SIC codes or a listing of job titles by instructional program codes.

The Collected Data File

The collected data file contains up to eighteen variables for each basic occupational unit. The first four variables are identifiers and consist of an accession number of the respondent, the respondent's county code, the respondents SIC code and the DOT number of the job title.

The next fourteen variables contain the collected data (see the data collection instrument in appendix F of the Phase I report).

Positions, Full-time and Part-time:							Should there be an Agricultural Training Program for this job?	
		Full-time		Part-time		No. of unpaid family labor		
		Year Round	Seasonal	Year Round	Seasonal		Yes	No
1980	Total number of positions	(5)	(8)	(11)	(14)	(17)	(18)	
	Total number of openings	(6)	(9)	(12)	(15)			
1982	Expected number of positions	(7)	(10)	(13)	(16)			

DATA SOURCES AND DATA COLLECTION PROCEDURES

Six data sources were located from which to collect employment demand data. These were discussed in detail in the Methodology section under question 4. The six data sources consist of ES 202 tapes, trade association lists, public agency lists and data, the 1978 Census of Agriculture, the personnel office of very large firms, and the New York State Yellow Pages Directories. The public agency sources and the Census of Agriculture should continue to be used for the eight SIC codes they cover. These are:

1.	*0102	Agricultural Production (*a dummy number combining 01 and 02).
2.	0912	Finfish
3.	0913	Shellfish
4.	8211	Elementary and Secondary Schools
5.	8221	Colleges, Universities and Professional Schools
6.	9411	Administration of Educational Programs
7.	9512	Conservation Agencies
8.	9641	Regulation of Agricultural Marketing & Commodities (covering Ag. Extension Services, Department of Ag & Markets, & USDA.)

The remaining data was collected either from a mailed survey or from a Yellow Pages survey. Only five business areas were included in the Yellow Pages survey. The rest were obtained from the mail survey. The two data sources for the mailed survey were the ES 202 tapes and trade association lists. A comparison of the workloads required to conduct the mailed survey and the Yellow Pages survey indicates that the Yellow Pages procedures are more cost-effective than conducting a mailed survey. Therefore, it is recommended that the Yellow Pages procedures be used in place of the mailed survey for as many SIC codes as possible. Further, it is recommended that the same survey procedures be used for the remaining SIC codes even if the firm names and addresses are obtained from the ES 202 files or trade association lists. Appendix F contains a description of the Yellow Pages survey procedures.

THE UPDATE SYSTEM WORKLOAD

To reduce both the costs and the work burden of collecting employment demand data, it is recommended that update activities be conducted over a three year period. Assuming that the same set and number of SICs are to be used as in the Cornell study, the SICs can be divided into three groups of approximately twenty-two SICs each. Group one would be surveyed the first year, group two the second year, and group three the third year. Data should be collected from all the educational planning regions each year. Thus, each year's study would collect 22 x 13 stratified samples instead of 66 x 13 stratified samples. If the Yellow Pages procedures are used manually the workload is equivalent to 44 weeks of 1 FTE. If computer access can be obtained to the Yellow Pages Directories the workload can be reduced by twelve work weeks.

4. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The information in this section is of two types, that originating from implementing the research procedures used in the study, and that from the data collected. The former has implications for methodology in future employment demand studies; the latter may be used by educational planners and others responsible for educational programs to prepare persons for employment in agriculture/agribusiness occupations.

The format used in this section is to present findings, conclusions and recommendations by formative and summative categories. This approach was used in order to provide readers with (1) a logical progression of related findings-conclusions-recommendations in a concise format, and (2) the option to focus selectively on individual categories of interest.

The five main categories for this section are organized as follows:

I. Data Sources
II. Data Collection
III. Analysis and Classification of Data
IV. Employment Demand
V. Update System

I. Data Sources

RESPONDENT POPULATION

Findings

Employer lists used for the survey were obtained from the Department of Commerce unemployment insurance records (ES 202 tapes) and from industry organization membership lists and directories. Employer lists from these sources were not available for six business areas, and yellow page directories (YPD) were used instead. YPD counts were also used for landscape contracting and retail florists as a check on the comprehensiveness of employer listings for these two business areas from the Department of Commerce. These two areas were selected since (1) both are characterized as having a number of firms operated totally by family members, i.e., no outside persons are hired and the firm would not be listed in the unemployment insurance records, and (2) landscape contracting include a number of firms operated by individual entrepreneurs on a seasonal basis who would not be listed in the yellow page directories.

Table 1 compares the number of firms in the survey lists (SL) with the number of firms counted in the YPD. The YPD count for retail florists firms is over three times (331.00%) that of the number of firms included in the SL. This disparity reflects both the large number of family operated florist shops and the fact that counts from the YPD are inflated by an undetermined amount by lists for the same firm in more than one directory, since duplication in YPD counts could not be eliminated cost-effectively within the project budget.

Table 1

NUMBER OF FIRMS IN THE SURVEY EMPLOYER LISTS COMPARED TO THE NUMBER OF FIRMS COUNTED IN THE YELLOW PAGES SURVEY

BUSINESS AREA	NUMBER OF FIRMS		
	Survey List (SL)	Yellow Pages Count (YPC)	% YPC of SL
Landscape Contracting	*2428	3391	140%
Retail Florist	**1366	4524	331%

* The SIC codes included in this business area are 0781, 0782, 0783.

** The SIC code reflected in this business area is 5992.

For landscape contractors, the YPD count is 140% of the number of firms in the SL. The higher YPD count reflects both family operated businesses and duplicate directory listings as for retail florist firms. However, the higher YPD count as compared to the SL probably reflects the many seasonal landscape contractors who are not listed in the yellow pages directories.

Returns from employers showed that the ES 202 tapes do not reflect changes in type of business for employers who have shifted to another business area, so that their SIC code assignments no longer apply.

Updated listings of employers from which a population could be specified were not available for all agriculture/agribusiness areas identified in the study. The following factors limited the availability of useful listings.

a. Some business areas such as dog and cat breeders are primarily small, part-time enterprises run by a single owner-operator.

b. Some listings such as veterinarians or animal health technicians could not be classified either by SIC codes or by educational planning regions in a cost-effective manner.

c. Firms within some business areas of an SIC code could not be disaggregated from the total list of firms within the code. For example, "Commercial Zoos" is a business area under SIC 7999, "Amusement and Recreational Services."

d. For some business areas such as dog breeders, a data source for a comprehensive list of employers was not available.

Many large agriculture/agribusiness firms had operations that applied to different SIC codes, and each SIC code had a unique listing of job titles.

One large firm provided data via computer tape which represented a heavy respondent burden in terms of programming for regional location, division by SIC code, and selection of occupations involving agriculture/agribusiness competencies.

Conclusions

1. The types of populations that can be included in an employment demand study are a function of the availability of data sources for reaching such populations from which to collect employment demand data. Comprehensive and accurate employer listings are not available for all areas of agriculture/agribusiness in New York State.

2. The ES 202 tape listings of employers for firms characterized by entrepreneurship and family operated businesses are incomplete and thus understated in number of firms. The ability to determine the need for education programs to prepare persons for such entrepreneurship and family "Mom and Pop" employment requires accurate employer listings.

3. Comprehensive and accurate listings of employers and entrepreneurs are needed to conduct valid sampling for cost-effective assessment of employment demand.

4. Collection of employment demand data from large agriculture/agribusiness firms is cost-effective but results in a heavy respondent burden.

Recommendations

1. Data bases for agriculture/agribusiness employers should be developed on an ongoing basis as part of the New York State information collection system.
2. Data from firms with operations classified under more than one SIC code should be treated for employment demand reporting purposes by SIC code. The divisions of a single corporation representing respective SIC codes relating to agriculture/agribusiness should be treated as separate business area respondents.

YELLOW PAGES DIRECTORIES (YPD)

Findings

Staffing patterns developed from the YPD survey for "small animal care" and "riding academies" vary with the population size of the geographic area represented in the directory. For example, small animal care businesses located in high population (urban) areas have larger numbers of employees than the same type of businesses in low population areas served by a given directory.

Use of YPD without access to telephone company computer tapes is a labor-intensive activity. Duplicate listings of the same firm in more than one directory often occurs, but the staffing needed to eliminate this duplication was beyond the resources of the study. Thus the data reported reflects this limitation as well as omitting numbers of openings.

Conclusions

1. Staffing patterns for firms listed in YPD differ by size of the business. Larger businesses are typically associated with urban areas.
2. Telephone yellow pages directories can be used as a source of employment demand data. However, stratification on the basis of population concentration served is needed to provide for differences in staffing patterns of firms. Duplicate listings of individual firms also need to be provided for.

Recommendation

Cost effective use of YPD as a source of demand data should (a) involve use of telephone company computer tapes -- particularly for use in elimination of duplicate listings of the same firm,(b) be used to collect information on openings as well as number of positions and (c) account for staffing pattern variations by size of business.

U. S. CENSUS OF AGRICULTURE

Finding

The employment demand data presented in the study's tables on the production agriculture workforce is limited since the data were taken from the 1978 Census of Agriculture which does not classify such information by business area or by SIC codes, e. g., dairy farm vs. vegetable farm. Additionally, the data is for the year 1978 rather than 1980 which is the vintage of all other demand data in the study.

Conclusion

The cost of collecting demand data for production agriculture other than by use of the 1978 Census of Agriculture was beyond the scope of the project budget.

Recommendation

A means is needed whereby employment demand data for production agriculture may be cost-effectively collected from existing data sources by type of farm enterprise, e. g., dairy, vegetables. Educational programs to prepare persons to conduct the varied enterprises of production agriculture will need this level of classification to reflect both the unique and common competencies required by workers conducting these enterprises.

II. Data Collection

JOB TITLES AND CODES

Findings

About four out of five job titles, for which employers reported demand data, were those added by employers. The listing of individual titles referenced by occupational and industrial coding systems can be found in the Table 3 listing provided to the sponsor.

Many job titles used in agriculture/agribusiness are not listed in the fourth edition of the DOT. The job titles selected from most of the other state studies reflected this finding.

In general, agriculture/agribusiness firms located in urban areas, e. g., New York City, tended to be larger and use more specialized job titles than did firms not located in large population centers.

The system of assigning "dummy" DOT numbers to job titles not listed in the DOT allowed for the merging of such job titles in the computer files used for summary and analysis.

The job title numbers plus applicable SIC codes used as the basic data collection unit for the study is a viable unit for information management. Further, the basic unit should facilitate increased articulation with data bases in other states and with the NOICC crosswalk classifications. Job titles per se are not by themselves useful occupational units for information management.

The system used for assigning "dummy" DOT codes to job titles not listed in the DOT is one temporary approach that may be used. However, the "dummy" coding system is limited by its three digit level of classification in comparison to DOT codes.

Conclusions

1. The very extensive list of job titles identified from the literature review were not, generally, the titles used by employers in agriculture/agribusiness. This is evidenced by the large number of titles added by employers on their survey returns.
2. The large number of job titles added by employers may be explained by small agriculture/agribusiness firms where more general titles such as "laborer" are used to reflect a variety of tasks performed by the same worker.

3. The national file of agriculture/agribuisness job titles, developed and coded as an initial step to select titles applicable to New York State, may prove useful to researchers in other states.

Recommendations

1. The majority of agriculture/agribusiness job titles used by employers in New York State are different from those listed in the Dictionary of Occupational Titles (DOT). Job titles identified in the study that are not currently listed in the DOT should be considered for inclusion in the DOT by the Department of Labor.
2. It is recommended that job titles not be used as a basic occupational unit for employment demand studies. Rather, that a unit be used that is larger in scope than a job title but small enough so employers can identify with it. The study recommends that the basic occupational unit defined for the study be used, namely, the nine-digit DOT number together with the four-digit SIC code.
3. Additional research is needed to identify the planning implications of differences in job titles by size of business that is associated with urban (large firms) and rural (small firms) areas.
4. A standardized system should be made available by the DOL for coding job titles not currently listed in the DOT until such can be considered for inclusion by DOL occupational analysts.

REASONS FOR NOT RESPONDING TO THE MAIL SURVEY

Findings

As part of the telephone survey of non-respondents to the mail survey, employers were asked the reasons for not completing the survey. The responses by frequency and percent are presented in table 2.

The overall response to the mail survey averaged 23 percent.

Table 2

REASONS WHY EMPLOYERS DID NOT RETURN MAIL SURVEY

	Reason	N	Percent
1.	Didn't receive the survey	197	19.37
2.	Returned the survey (but project staff didn't receive it)	18	1.77
3.	Did not perceive themselves in agriculture/agribusiness (but study includes their business area)	57	5.60
4.	They were sent a form for the wrong business area (and their type of business is not included in the study)	51	5.01
5.	They were sent a form for the wrong business area (but their type of business is included in the study)	28	2.75
6.	Have no employees other than family members (Mom and Pop operation)	42	4.13
7.	Out of business or deceased	44	4.33
8.	Prefers not to participate	65	6.39
9.	Were too busy to fill out the form	71	6.98
10.	Didn't understand how to fill out the form	8	.79
11.	Other		
	- Couldn't locate telephone number for phone survey contact	227	22.32
	- All other responses	209	20.55
Totals		1017	99.99

The over 19 percent of employers not receiving the survey includes survey forms returned with incorrect addresses, lack of internal communication, i. e., persons answering the telephone not the same as persons receiving the survey, errors by the U. S. Postal Service, and possibly an excuse to "save face."

The less than two percent responding that they had returned the survey form but it was not received/logged in by project staff indicates that the percentage of responses was valid and that project logging-in procedures for receiving surveys was efficient.

The employers who did not perceive themselves in agriculture/agribusiness (5.6%) were clustered in the SICs dealing with saw mills and paper mills. The low number of persons giving this response indicates that the perception of not being in agriculture/agribusiness was not a major factor in the percentage return for the mail survey.

The 5.01 percent who were sent a survey for the wrong business area were clustered in New York City and in the SIC's dealing with fluid milk, mills, testing labs, and breeding and training of standardbred horses. Therefore the lists for these SICs contained some errors but the employer lists overall were accurate as to type of business.

Only about four percent reported not responding due to having no employees other than family members. Firms of this type were, therefore, not a factor in percentage return for the employer lists used. However, it is likely that such firms were not included in the employer lists in the first place. This is supported by data from the Yellow Pages which is presented under the "Data Sources" section of this report.

The "Out of Business" or "Deceased" category (4.33%), and the "Couldn't locate telephone number for telephone survey contact" (22.3%) indicate over one fourth of non-respondents to the mail survey were out of business or had changed businesses. This means that a large number of firms change from year to year and points to the need for current listings of employers. Only 6.98 percent of non-respondents preferred not to participate in the study. This indicates a general recognition of the importance and need for the study. An additional 6.98 percent "were too busy to fill out the form" which could be interpreted as a similar response.

A very small number (8 or 0.79%) of non-respondents indicated they "didn't understand how to fill out the form" which indicated the mail survey instrument was easy to use.

The largest category is "All other responses" which included a wide range of other reasons.

Conclusions

1. Lack of current and correctly classified listings of employers was a major factor in non-responses.
2. Some entrepreneural business areas in agriculture/agribusiness experience considerable turnover in individual firms each year.
3. In general, the survey form was easy to complete and employer agreement with the need for the study was strong.

Recommendations

1. The survey of non-respondents supports the earlier recommendation for current and comprehensive lists of agriculture/agribusiness employers.
2. The format of the data collection instrument used in the study should be considered for use in future employment demand studies.

EDUCATIONAL LEVEL, NEED FOR TRAINING, AND PERCEPTION OF AGRICULTURE/AGRIBUSINESS

Findings

Data on educational level and amount of training required for given positions were not collected from employers even though these data items were included in the project proposal. The decision was based on advice from the project Advisory Committee and pretests with employers.

Examination of employer responses to "Need for Agricultural Training Program" indicated that these data were of questionable validity and therefore are not reported as findings. Employers did not agree on a definition of agriculture. For example, a number of veterinarians checked the "No" box for the question. Despite instructions on the questionnaire, many employers' comments indicated that no training program was needed even for technical and management level positions.

Many employers in business areas such as meat processing and veterinary medicine did not perceive their type of enterprise to be a part of agriculture or agribusiness.

Employer responses indicated that employers are not a valid source of data on the need for agricultural educational programs for entry to a position. Educational needs will be better identified by curriculum development based on detailed occupational analyses.

The unavailability of data on educational level precluded identification of four-year college, two-year college and secondary educational programs assignments to basic occupational units. There was no way to determine if competence was developed through education or experience. Placement of graduates in specific occupations can be used as one type of indicator of demand.

Conclusions

1. In general, it is not feasible to collect data on "educational level" and "need for training" from employers. The professional level occupations such as "veterinary" are exceptions, but educational levels for these are usually already established by licensing requirements.
2. Differences in job titles for the same title make identification of "educational level" and "need for training" difficult at the non-professional level. Specification of tasks for individual job titles would assist in defining educational level. However, such specifications would be cost-intensive to develop and validate; and would also increase the length and complexity of the survey instrument.
3. Employers hold differing views on the definition of agriculture/agribusiness. Studies that collect data from employers on the need for agriculture/agribusiness competencies will need to provide for such differing perceptions.

Recommendations

1. That employment demand studies which do not include detailed task descriptions for individual job titles should not include a request for information on requirements for "educational level," or "need for training."

III. Analysis and Classification of Data

MANAGING LARGE DATA FILES

Findings

A computerized information management system was needed to cost effectively establish and manipulate large data files.

Even using a computerized information management system, the project computer budget was less than 20 percent of that needed.

Conclusions

1. Large data files are very expensive to sort and merge for data analysis.
2. As discussed in the earlier section on "Data Collection," the basic occupational unit for demand research is a basic component of an information management system.
3. A computerized information system is necessary for cost-effective management of large data files.
4. Computer formatting of data tables for large data files is cost-effective.

Recommendations

1. An information management system should be included as an integral part of the initial project planning.
2. Computer costs need to be budgeted at a high level where large data files are used.
3. Computer formatting of data tables should be planned for, and implemented, as part of a computerized information management system.

INSTRUCTIONAL PROGRAM CODES

Findings

Classification of job titles in this study using the February 1981 program codes indicated that some revision to the coding system is needed to provide meaningful classification for the total range of job titles for agriculture/agribusiness.

Given the categories in the revised taxonomy, the job titles at the technical level, in particular, were difficult to classify differently from job titles at the laborer level in the same business area. Therefore, some program code classifications were assigned arbitrarily.

Also, a problem was encountered in classifying managerial level positions such as "owner operator" where the same person performs managerial and technical tasks. There are no provisions for a joint managerial/skilled work person classification.

Conclusion

1. The new February 1981 program code classification does not apply without ambiguity to all titles reported in the study.

Recommendation

1. The February 1981 program code classification needs to be studied in terms of its application to the agriculture/agribusiness job titles reported by employers in this study.

IV. Employment Demand

NUMBER OF POSITIONS

Findings

Table 3 presents the frequency and percentages of positions statewide in 1980 by two digit instructional program codes (February 1981

Table 3

FREQUENCY AND PERCENTAGE OF STATE WIDE DEMAND FOR AGRICULTURAL/AGRIBUSINESS POSITIONS IN 1980 BY TWO DIGIT INSTRUCTIONAL PROGRAM CODES

	Full-Time Year-Round		Full-Time Seasonal		Part-Time Year-Round		Part-Time Seasonal		Unpaid Family Labor		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
01. Agribusiness & Agric.Prod.	110,604	75.5	100,560	97.0	5036	49.6	8610	77.9	855	47.2	225,665	82.6
02. Agricultural Sciences	2411	1.6	191	0.2	99	1.0	52	0.5	12	0.7	2765	1.0
03. Renewable Natural Resources	12,409	8.5	80	0.1	2183	21.5	74	0.7	101	5.6	14,847	5.4
04. Archit & Environ Design	106	0.1	21	0.0	8	0.1	6	0.1	0	0.0	141	0.1
06. Business & Management	413	0.3	0	0.0	202	2.0	0	0.0	0	0.0	615	0.2
08. Marketing & Distribution	13,376	9.1	2511	2.4	2046	20.1	2205	19.9	665	36.7	20,803	7.6
09. Communication	34	0.0	0	0.0	17	0.2	0	0.0	0	0.0	51	0.0
13. Education	1969	1.3	0	0.0	35	0.3	0	0.0	0	0.0	2004	0.7
14. Ag Engineering	405	.3	30	0.0	0	0.0	0	0.0	14	0.6	449	0.2
15. Engineering & Related Tech.	358	.2	3	0.0	5	0.0	2	0.0	6	0.3	374	0.1
17. Allied Health	1561	1.1	65	0.1	386	3.8	64	0.6	43	2.4	2119	0.8
18. Health Sciences	1293	0.9	25	0.0	89	0.9	24	0.2	29	1.6	1460	0.5
26. Life Sciences	25	0.0	0	0.0	8	0.1	0	0.0	0	0.0	33	0.0
31. Parks & Recreation	199	0.1	30	0.0	2	0.0	4	0.0	16	0.9	251	0.1
48. Precision Production	1205	0.8	147	0.1	43	0.4	13	0.1	72	4.0	1480	0.5
49. Transport & Mater. Moving	94	0.1	0	0.0	0	0.0	0	0.0	0	0.0	94	0.1
	146,462	99.9	103,663	99.9	10,159	100.0	11,054	100.0	1813	100	273,151	99.9

taxonomy). The table indicates several findings regarding 1980 demand.

First, more than four-fifths (82.69%) of all positions are in Code 01, Agriculture/agribusiness production. Additionally, almost 96 percent of all positions are in the three codes of 01., 03., and 08. However, it should be noted that the study was limited to firms that work directly with production agriculture, either supplying goods and services to it or processing and distributing its products. Therefore a number of non-production (agribusiness) firms, although important, are not represented in the study. A comparison of the firms included, to those excluded, would show that fewer of the workers in excluded firms require agricultural competencies, and a lower percentage of the tasks performed involve agricultural competencies.

A second finding is that 97 percent of full time seasonal positions are also in Code 01. For full-time, year-round positions, over 93 percent are in the three codes 01., 03., and 08. None of the other codes have even two percent of the total positions. It is interesting that a similar pattern exists for unpaid family labor although the percentage (89.5%) is slightly lower than that for positions.

An examination of the job titles in codes with a limited number of positions, in most cases, shows that a high percentage of these positions reflect occupations requiring two-year or four-year college degrees for entry level.

The total number of 1980 agriculture/agribusiness positions identified for the SIC codes included in the study, excluding family labor, was 271,338. This number, which does not include all of agriculture/agribusiness, is 110 percent greater than the 1985 projection for agriculture of 128,910 (projected from 121,302 in 1974) in the New York State Department of Labor (NYS DOL) Planning Information for Vocational Education: Fiscal Year 1981.

For those employers who were engaged in two related business areas which they themselves did not differentiate but treated as one type of business, the data collected from them was subsumed under one business area (SIC code). For example, nursery workers were reported under "landscaping" when landscaping was listed as the firm's type of business.

Demand data for two related instructional program codes may be misleading since an employer may have reported positions that were classifiable in both. For example, 01.0606 "Nursery" has small numbers. However, many employers who reported themselves as landscapers also operated a nursery. Such employers were reported in 01.0605 "Landscaping." Thus, many workers reported under "Landscaping" also perform nursery work.

Demand is understated in business areas with large numbers of family operated businesses. Firms which do not employ outside persons are not included in sources such as the unemployment insurance files from which listings of employers were collected. As stated earlier, a comprehensive listing including family operated businesses will be necessary in order to provide accurate demand data for educational planning.

Eight detailed data tables listed in Appendix B are available to assist in determining demand data in specific geographic areas and industries.

State-wide totals by six digit program code are presented in Appendix C. Educational planning totals are included in Summary Report: A Study of Employment Demand Data for Agriculture/Agribusiness in New York State.

The considerations for interpretation of the state-wide totals are stated as an introduction to Appendix C.

Conclusion

1. The total number of positions from the analysis of study data -- which does not include all of agriculture/agribusiness -- is almost twice the number of positions reported for SED 1981 fiscal year planning. This difference means that either (a) the total number of positions the NYS DOL projected is less than 50 percent of those counted in this study and/or (b) the positions defined as agriculture by the DOL are more limited than the definition used in the Cornell research.

Recommendation

1. Additional demand research is needed to resolve the differences in number of positions reported by the SED fiscal year 1981 for planning purposes, and the 185 percent larger number reported for part of agriculture/agribusiness in New York State.

NUMBER OF OPENINGS

Findings

Table 4 presents the data on the agriculture/agribusiness job openings for 1980. As discussed in the preceding section, data on projected number of openings for 1982 was not collected from employers due to questionable validity.

As with the data on number of positions, Code 01., Agribusiness and Agriculture Production, has by far the largest number of openings, 63.3%. Further, Codes 01. and 08. combined account for 87.3 percent of all opennings. It should be noted, however, that the data exclude production agriculture since data for number of openings are not provided by the U. S. Census of Agriculture. As might be expected, the general pattern for openings is similar to that for positions in Table 3.

Other findings from Table 4 (which excludes production agriculture) are:

1. The program codes with the highest number of openings also have a high number of seasonal and/or part-time positions.
2. Only five program codes have over 400 openings, i. e., codes 01., 02., 03., 08., and 17.
3. Almost three quarters (74.3%) of openings are full-time, and half (50.8%) of these are full-time year-round.

Table 4

FREQUENCY AND PERCENTAGE OF STATE WIDE DEMAND FOR AGRICULTURAL/AGRIBUSINESS OPENINGS IN 1980 BY TWO DIGIT INSTRUCTIONAL PROGRAM CODES

		Full-Time		Part-Time		Total	
		Year-Round	Seasonal	Year-Round	Seasonal	Freq.	%
01.	Agribusiness & Agric. Production	5747*	2687*	1006*	2375*	11,815	63.3
02.	Agricultural Sciences	294	170	3	17	484	2.6
03.	Renewable Natural Resources	365	6	30	10	411	2.2
04.	Archit & Environ Design	27	7	6	7	47	0.3
06.	Business & Management	44	0	13	0	57	0.3
08.	Marketing & Distribution	1929	1440	319	896	4584	24.6
09.	Communications	5	0	0	0	5	0.0
13.	Education	145	0	2	0	147	0.8
14.	Ag Engineering	84	0	0	0	84	0.5
15.	Engineering & Related Tech	17	1	0	0	18	0.0
17.	Allied Health	348	14	86	22	470	2.5
18.	Health Sciences	275	8	27	10	320	1.7
26.	Life Sciences	0	0	0	0	0	0
31.	Parks & Recreation	23	3	0	1	27	0.1
48.	Precision Production	166	10	12	0	188	1.0
49.	Transport & Mater Moving	0	0	0	0	0	0
	*Excludes Production Agriculture in U.S. Census of Agriculture	9469	4346	1504	3338	18,657	99.9

4. The findings on numbers of openings by 2-digit program codes indicate that 11 of 16 codes have less than 400 openings per year.

Conclusions

1. Given the scope of the study, the data indicate that areas with the greatest number of positions will have the greatest number of openings.
2. The lack of data on production agriculture openings is a major limitation of the study.
3. Full-time positions are the most important in terms of total numbers.

Recommendations

1. Employment demand research is needed to determine the number of positions in production agriculture.
2. Development of regional programs should be considered to meet employment demand for program areas with a smaller number of openings.
3. The major emphasis in educational programs should be for preparation to enter full-time positions.

PROJECTIONS, TRENDS, AND OUTLOOK

Findings

Table 5 was compiled to determine the extent to which data indicated trends in employment demand for agriculture/agribusiness positions. It should be noted, however, that comparisons of 1980 and 1982 positions are limited by a lack of data on 1982 positions in production agriculture which were not available from the U. S. Census of Agriculture. A similar comparison table for openings was not possible since data on openings were collected only for 1980. The Advisory Committee for the project took the position that individual employers are not a valid source of projected job openings -- even on the basis of two-year projections.

The data in Table 5 shows that eight instructional programs had a positive change in number of positions, and five had a negative change. The largest changes were a 49.6 percent increase in Architecture and Environmental Design (04.), and a 13.6 percent decrease in positions in Engineering and Related Technology (15.). However, the number of positions reflected in the changes are only 70 and 50 respectively, and a similar pattern of small numbers exists for the other changes.

The findings on differences in numbers of openings between 1980 and 1982 (excluding production agriculture) showed an increase of only 365 positions (plus 0.8 percent). This small number distributed over 16 program codes has limited impact for educational planning purposes.

The OE I/O Matrix used for long-term employment projections was not yet fully developed for agriculture/agribusiness in New York State as of the completion of the study.

Conclusions

1. The differences between 1980 and 1982 data do not show any significant trends.

Table 5

FREQUENCY OF STATE WIDE DEMAND FOR AGRICULTURE/AGRIBUSINESS POSITIONS IN 1980 AND 1982 BY TWO DIGIT INSTRUCTIONAL CODES

	FULL-TIME		FULL-TIME		PART-TIME		PART-TIME		TOTAL					
	1980	1982	1980	1982	1980	1982	1980	1982	1980	1982	1980	1982	Difference 80 vs 82	% Change
	YEAR-ROUND		SEASONAL		YEAR-ROUND		SEASONAL		UNPAID FAMILY LABOR					
01. Agribusiness & Agric Prod	110,604	* 40,640	100,560	* 9902	* 5036	* 5142	* 8610	* 8895			224,810	* 64,579	* N/A	* N/A
02. Agricultural Sciences	2411	2548	191	176	99	97	52	60			2753	2881	+ 128	+ 4.6
03. Renewable Natural Resources	12,409	12,613	80	78	2183	2164	74	68			14,746	14,923	177	+ 1.2
04. Archit & Environ Design	106	182	21	14	8	9	6	6			141	211	70	+ 49.6
06. Business & Management	413	447	0	0	202	218	0	4			615	669	54	+ 8.8
08. Marketing & Distribution	13,376	13,067	2511	2622	2046	2088	2205	2522			20,138	20,299	161	+ 0.8
09. Communication	34	37	0	0	17	20	0	0			51	57	6	+ 11.8
13. Education	1969	1968	0	0	35	33	0	0			2004	2001	- 3	- 0.1
14. Ag. Engineering	405	454	30	22	0	0	0	4			435	480	+ 45	+ 10.3
15. Engineering & Related Tech	358	308	3	3	5	4	2	3			368	318	- 50	- 13.6
17. Allied Health	1561	1428	65	70	386	354	64	75			2076	1927	- 149	- 7.2
18. Health Sciences	1293	1333	25	32	89	98	24	16			1431	1479	48	+ 3.4
26. Life Sciences	25	25	0	0	8	8	0	0			33	33	0	0
31. Parks & Recreation	199	185	30	30	2	2	4	4			235	221	- 14	- 6.0
48. Precision Production	1205	1115	147	147	43	16	13	22			1408	1300	- 108	- 7.7
49. Transport & Mater Moving	94	94	0	0	0	0	0	0			94	94	0	0
Total Including Code 01.	146,462	* 76,444	103,663	* 13,096	10,159	* 10,253	11,054	* 11,679			271,338	111,472		
Total Excluding Code 01.											46,528	46,893	365	0.8

* Excludes production agriculture positions for 1982 which were not available from the U. S. Census of Agriculture

2. Longer term projections that include production agriculture using the Occupational Employment Statistics (OES) I/O matrix may identify more valid and long term trends with significance for planning purposes.

3. The data indicate that numbers of positions are underestimated by 50 percent and indicate therefore that additional agricultural education programs are needed in New York State

4. The increasing shortage of food world-wide as well as an expanding export market make high levels of food production an increasing priority for the future. Collecting valid and comprehensive employment data as a basis for planning educational programs to prepare competent workers to meet this production need thus becomes a correspondingly high priority.

Recommendations

1. Educational programs in agriculture to reflect the greater number of agriculture/agribusiness positions identified should be initiated.

2. The Occupational Information System (OIS) mandated under the 1976 Vocational Education Amendments needs to be further developed to include agriculture/agribuisness. Modification is needed in terms of inclusion and coding of new titles, and development of an operable Occupational Employment Statistics (OES) matrix for projections. Also, appropriate computerized coding crosswalks by job title will be needed to access data from existing data sources for the OES matrix.

3. Additional research is needed to determine employment demand in the agribusiness firms excluded from the study due to budget limitations, i. e., those firms not directly functioning to supply inputs to, or process/distribute the products of, production agriculture.

4. A review of studies on employment demand in agriculture/agribusiness shows a need for research on emerging and obsolescing occupations. Development of the OES matrix for agriculture/agribusiness will identify trends and thereby facilitate such research efforts.

5. Additional dissemination of demand data to user groups is needed.

6. Research is needed to identify the new technologies impacting on agriculture/agribusiness as a means of predicting new, emerging, changing, and obsolescing occupations. Educational planning to reflect these occupational changes should be initiated.

V. Update System

Findings

The update system developed in the project is described in Section 3.

The project development of a basic occupational unit provides the core from which data bases can be utilized for employment demand data through use of a computerized information system.

The findings for the update system are reflected in the section detailing its nature and development. The uniqueness and complexity of an update system for the many varied occupations in agriculture/agribusiness suggests that a number of procedures and data sources be refined through try-out and testing.

Conclusions

1. A major factor in the success of the update system will be availability of current and comprehensive employer, and entrepreneur listings.
2. The basic occupational unit developed in the study is viable for an update system.
3. Cost-effectiveness of the update system will be enhanced to the extent that valid data bases are (a) collected as part of the New York State information collection, (b) readily accessible to a computerized information system, and (c) subject to valid sampling procedures.
4. It will be important for the update system to interface directly with the OES I/O matrix to provide projected data.

Recommendations

1. The update system developed as part of the study should be field tested and further developed.
2. The data bases for the update system should be developed and validated as part of the regular information collection process by the New York State Education Department, rather than by special studies.
3. The update system should articulate with the OES I/O matrix for developing long term projections.
4. A computerized information management system should be instituted to provide cost-effective implementation of the update system.
5. Dissemination of updated demand data to users should be provided.
6. The application of the update system for other states should be investigated.

5. EVALUATION OF PHASE II PROJECT

There were five project objectives listed in the Phase II proposal and for each a summative evaluation strategy was described. The evaluation outcomes for each of the project's Phase II objectives are discussed below. Formative issues were discussed in the Methodology section.

OBJECTIVE 1: SUMMARIZE AND ANALYZE THE COLLECTED DATA

Measures: 1.1 Data summaries will be provided along dimensions determined by user group information needs.

1.2 The appropriateness of the analysis and interpretation will be assessed by Institute staff specialists and by the advisory committee.

Evaluation Outcomes: The project met the objective 1 measures.

1.1.1 Meetings were held with representatives of user groups including regional planners and SED planning staff. The regional planners wanted a brief report consisting of two-page summaries of frequencies by instructional program codes for each region. SED staff needed the data aggregated in detail so that frequencies would be available at the DOT number level, aggregated by instructional program codes with job titles listed with the DOT number. Also required was the same data displayed as percentages. In addition, a different table aggregating frequency data by SIC code for each region and statewide was needed. In response to the SED's information needs Tables 1, 5, and 6 were developed and resulted in 800 pages of computer printouts. A summary report was developed which displays frequencies by instructional program code for each educational planning region as well as statewide. This report lists no more than two pages of data for each region.

1.2.1 The advisory committee at its last meeting reacted to the data formats and their recommendations were incorporated into the final products.

OBJECTIVE 2: APPLY APPROPRIATE CROSS-CODING SYSTEMS TO PROJECT DATA

Measure: 2.1 The effectiveness of the application of cross-coding systems to the project's data will be assessed by the reliability with which the project's data can be accessed by using such coding.

Evaluation Outcome: The project met the Objective 2 measure.

2.1.1 The following coding systems were used in the project and each type was treated as a variable: nine-digit fourth edition DOT occupational codes, four-digit SIC codes, and the six-digit instructional program codes revised in February 1981. The nine tables provided to the sponsor demonstrate the success in accessing the data by using the variables listed.

OBJECTIVE 3: DEVELOP PROCEDURES AND MATERIALS TO ASSIST APPROPRIATE TARGET AUDIENCES TO USE THE EMPLOYMENT DEMAND DATA.

Measure: 3.1 The effectiveness and utility of the user guide will be assessed by using a pre-pilot sample of users.

Evaluation Outcome: The project met Objective 3, but the measure was not applicable.

3.1.1 At the final advisory committee meeting, the members advised project staff that a user's guide was not needed. Rather, that a data summary preceded by a brief introduction should be prepared. Therefore, the need to pre-pilot a user's guide was no longer applicable. However, the summary report was designed in response to the targeted user's information needs. In addition, the data tables have an introductory description to guide user interpretation of the tables.

OBJECTIVE 4: DISSEMINATE PROJECT DATA TO USER GROUPS.

Measure: 4.1 Dissemination will be evaluated by the extent to which the data tables are received by the target audiences for which they are intended.

Evaluation Outcome: Dissemination of the various tables will be done by the sponsor after termination of the study.

4.1.1 The project provided the SED sponsor with 1500 copies of the summary report, and camera-ready copy for all the tables. The SED will duplicate the tables and disseminate them to various groups. The tables will be used by the futuring committee on agriculture/agribusiness, and by participants at the ATANY Conference later in the year.

OBJECTIVE 5: ASSESS PROJECT SUCCESS

Measure: 5.1 The degree to which the project achieved its outcomes will be measured by applying the evaluation procedures described above.

Evaluation Outcome: The Objective 5 measure has been set.

3.1.1 The project met the intent of all its objectives. The size and scope of the data collection and analysis needed to develop the final products were much greater than originally anticipated but the project did deliver the expected products (see Appendix B).

FOOTNOTES

1. See the Bibliography listed on pages 29-34 of *A Study of Employment Demand for Agriculture and Agribusiness in New York State*, Phase I Final Report; Institute for Occupational Education, Department of Education, Cornell University; April 1981.

2. Letter from Melvin R. Jannsen, Chairman of the National Committee on Employment Opportunities in Agriculture and Agribusiness, to Russell Flanders, Executive Director of the National Occupational Information Coordinating Committee; March 6, 1980.

3. Memorandum to SOICC Directors from Russell B. Flanders, Executive Director of National Occupational Information Coordinating Committee; March 7, 1980.

4. See Paige Birdsall, *A Study of the Issues Related to the Collection of Occupational Employment Data in Agriculture*; National Occupational Information Coordinating Committee; December 1980; p. 2.

5. *Ibid*., p. i

6. See the *Agribusiness Occupational Identification Project -- Phase I (Employment in Agribusiness Occupations)* report prepared under the direction of the National Committee on Employment Opportunities and Training Needs in Agribusiness; draft version 10/3/1973.

7. National Occupational Information Coordinating Committee; *Vocational Preparation and Occupations, Vol. 1*, *Occupational and Educational Code Crosswalk*; Interim Edition, 1979.

8. U.S. Department of Commerce; *Standard Occupational Classification Manual, 1977*; Government Printing Office; Washington, D.C.; 1977.

9. See Kendrick L. Spooner; *An Occupational Employment Survey of Agriculture in Colorado*; Colorado State Occupational Information Coordinating Committee; January 1981; p. 10.

10. National Center for Education Statistics; *A Classification of Instructional Programs*; February, 1981.

11. See the document referenced in Footnote 1.

12. Odessa Dubinsky; *A Review of Employer Forecasting Methods and Data*; NOICC Administrative Report No. 4; February, 1981.

APPENDIX A

SAMPLING PROCEDURE FOR NONRESPONDENTS TO EMPLOYMENT DEMAND SURVEY

Where

N = the number (population) of business establishments in a Standard Industrial Classification (SIC) code surveyed for employment demand data (sample=total pop.)

R = the number of business establishments responding to the survey for an SIC code.

P = the percent response for an SIC code (i.e. R/N)

S = the number of business establishments in the sample of nonrespondents for individual SIC codes.

If Educregn = 75
Add to Region 3

If Educregn = Out
S = 0

If N = R
S = 0

If N = 11 or greater
P = 50% or greater
S = 0

If N = R
S = 0

If N = 5 or less
S = N minus R

If N = 6-15
S = (.5 x N) minus R

If N = 16-30
S = (.3 x N) minus R

If N = 31-50
S = (.25 x N)minus R

If N = 51-100
S = (.15 x N) minus R

If N = 101-200
S = (.15 x N) minus R

If N = 201 or more
S = (.05 x N)

Summary of Sampling

N Range	Percent Sample	N Range Increment	Sample Range
0 - 5	100	5	1 - 5
6 - 15	50	10	3 - 7
16 - 30	30	15	5 - 9
31 - 50	25	20	8 - 10
51 - 100	15	50	8 - 15
101 - 200	10	100	10 - 20
201 and greater	05	--	10 - greater

APPENDIX B

EMPLOYMENT DEMAND STUDY'S PRODUCTS

1. A Study of Employment Demand for Agriculture and Agribusiness in New York State, Phase I Final Report
2. Summary Report: A Study of Employment Demand Data for Agriculture and Agribusiness in New York State
3. Table 1: Demand Data for Job Titles by Instructional Program Codes and SIC codes
4. Table 2: List of Job Titles by DOT #s, with Program and SIC codes
5. Table 3: Alphabetical Listing of Job Titles with DOT #s, and Program and SIC codes
6. Table 4: List of Job Titles by SIC Code, with Program Codes and DOT #s
7. Table 5: Demand Data in Tbale 1 Displayed as Percentages
8. Table 6: Demand Data for Job Titles by SIC Codes
9. Table 7: List of SIC Codes Used in the Study
10. Table 8: List of Instructional Program Codes Used in the Study
11. Magnetic Tape containing the following raw data files:
    a) National file of job titles
    b) Basic Occupational Units file containing job titles used by employers in New York State
    c) Collected data file
    d) List of firms used as respondents
    e) List of Department of Education instructional program codes used in study
    f) List of SIC codes used in study
12. A Study of Employment Demand for Agriculture and Agribusiness in New York State, Phase II Final Report
13. An Update System to Collect Employment Demand Information in Agriculture/Agribusiness in New York State

APPENDIX C

SUMMARY REPORT: A STUDY OF EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE

SUMMARY REPORT: A STUDY OF EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE

Gloria S. Cooper, Arthur L. Berkey, William E. Drake and Richard W. Tenney
Cornell University, Ithaca, New York

The data in this summary report are presented by instructional program codes for each of the 13 educational planning regions and statewide.

BACKGROUND

The twenty-two month study was conducted during 1980 and 1981. It was funded by the New York State Education Department through the Cornell Institute for Occupational Education; and by the College of Agriculture and Life Sciences at Cornell University.

An advisory committee representing agriculture and agribusiness, the Department of Labor, the State Education Department and other concerned institutions provided expertise and guidance to the study.

THE STUDY

This study is intended for persons planning educational programs in New York State for agriculture/agribusiness. The data was collected from 120 business areas (*e.g.*, retail florists). These business areas include: (1) production agriculture including allied businesses (*e.g.*, natural resources, animal care); (2) firms supplying goods and services directly to production agriculture; and (3) firms processing or distributing products directly from production agriculture. Thus, farm machinery dealerships are included but not machinery manufacturers. Meat processing plants were surveyed but not retail farm markets.

Data from the 1978 Agricultural Census were used for production agriculture. Over 15,000 mailed surveys were used to collect data from the other business areas. About 1600 telephone contacts were subsequently made to employers who did not respond to the mailed surveys. Employment demand data on six business areas for which no employer lists were available were collected through Yellow Pages directories. Additional data were collected by personal contact.

ADDITIONAL DATA AVAILABLE

More detailed data tables are available from the State Education Department. The current contact is: Lee A. Traver, Chief, Bureau of Agricultural Education, State Education Department, 99 Washington Avenue, Albany, New York 12234. The data tables are:

TABLE 1: DEMAND DATA FOR JOB TITLES BY INSTRUCTIONAL PROGRAM CODES AND SIC CODES.
There is a separate data section for each of the 13 educational planning regions and for the entire state. Each section is organized by six-digit instructional program codes under which are listed the relevant DOT numbers. Under each DOT number is a list of job titles by SIC codes. Totals are given for the six-digit program codes, the DOT numbers and the job titles by SIC codes under the DOT numbers. This printout is 300 pages.

TABLE 2: LIST OF JOB TITLES BY DOT #S, WITH PROGRAM AND SIC CODES.
This table contains the names of all the job titles for which data were collected in the study. The job titles are in DOT number order and have SIC codes and program codes listed in this 27 page table.

TABLE 3: ALPHABETICAL LISTING OF JOB TITLES WITH DOT #S, AND PROGRAM AND SIC CODES.
This table contains the same information as Table 2, but the job titles are in alphabetical order.

TABLE 4: LIST OF JOB TITLES BY SIC CODE, WITH PROGRAM CODES AND DOT #S.
This table lists the same information as Tables 2 and 3 organized by SIC codes. Tables 1-4 contain an asterisk next to the job titles that were added by employers on the returned survey forms.

TABLE 5: DEMAND DATA IN TABLE 1 DISPLAYED AS PERCENTAGES.
In table 1, each six-digit instructional program code (*e.g.*, 01.0602 "Arboriculture") represents a percentage of a broader four-digit summary area (*e.g.*, 01.06 "Horticulture"). In turn, an area such as Horticulture is shown as a percentage of the sum of other four-digit areas such as 01.02 (Agricultural Mechanics) or 01.05 (Agricultural Supplies and Services). The sum of all the four-digit areas sharing the same first two digits is also shown as a percentage. Thus, 01. (Agricultural Production) is compared with other two-digit levels such as 02. (Agricultural Sciences) or 03. (Renewable Natural Resources). This printout is about 260 pages.

TABLE 6: DEMAND DATA FOR JOB TITLES BY SIC CODES. This 240 page table displays the same data as Table 1 organized by SIC codes rather than instructional program codes. The job titles are listed under each SIC code and totals are given for the DOT numbers associated with the job titles.

TABLE 7: LIST OF SIC CODES USED IN THE STUDY. This table provides the SIC codes and their names for which employment demand data were collected. This list also contains the names of the business areas that were included under SIC codes.

TABLE 8: LIST OF INSTRUCTIONAL PROGRAM CODES USED IN THE STUDY. This list includes the names of the program codes used in the study at the two-digit, four-digit, and six-digit levels.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS. This section of the Phase II Final Report, *A Study of Employment Demand For Agriculture and Agribusiness in New York* State is also available.

CONSIDERATIONS WHEN USING THE DATA FOR PLANNING

The employment demand data reported in the summaries that follow are presented by six-digit instructional program codes using the revised list of codes issued in February 1981. There is a two-page summary for each of the 13 educational planning regions and an additional summary for statewide totals.

For 1980, information was collected on number of positions and openings, both year-round and seasonal for full-time (F-T) and part-time (P-T) employment. In addition, data was collected on unpaid family labor. For 1982, information was collected only on anticipated number of positions both year round and seasonal for full-time and part-time employment. These data are reported in 13 cells for each six-digit program code. Information was not collected on anticipated number of openings in 1982, since such data tends to have low reliability when collected from employers.

The following should be considered when interpreting the data:

1) The data reported represents a projection from survey returns to the total population of employers surveyed. Thus, the data are estimates rather than actual counts.

2) The data represent only part of agriculture/agribusiness in New York State. As described under THE STUDY above, only production agriculture reflected in the *Census of Agriculture*, natural resources and small animal care; and agribusiness firms directly providing supplying and processing/distribution to the three areas just named are included. Additionally, only those business areas were surveyed for which comprehensive lists of employers could be obtained. For example, SIC 7342, "Exterminating Services," was not included because the list of businesses that serve agriculture/agribusiness could not be determined. "Commercial Zoos," a business area under SIC 7999, "Amusement and Recreational Services," was also excluded since a list of firms could not be collected.

3) All production agriculture is (a) reported under program code 01.0301, "Agricultural Production, General," and (b) limited to 1978 data on positions. *The U.S. Census of Agriculture* did not report numbers of workers by type of farm or by SIC codes.

4) Data on the USDA and the state's Department of Agriculture and Markets are reported in statewide totals only.

5) Regional data tables contain only the instructional program codes under which data was reported by employers for that region. The statewide data tables, thus contain more instructional program codes than are reported in some regional tables.

6) Demand data for two related program codes may be misleading since an employer may have reported positions that are classifiable in both. For example, 01.0606 "Nursery Op & Mgt" has small numbers. However, many employers who reported themselves as landscapers also operated a nursery. Such employers were reported in 01.0605 "Landscaping." Thus, many workers reproted under "Landscaping" also perform nursery work.

7) Demand data is understated in business areas with large numbers of family operated businesses. Firms which do not employ outside persons are not included in sources such as the unemployment insurance files from which listings of employers were collected.

8) Job titles involving managerial responsibility were coded both in the business area instructional program code and the managerial instructional program code (e.g., in 01.0606 Nursery Operation and Management, and in 01.0101 Agricultural Business Management, General). To avoid duplicate counts for the same job titles, only totals for the business area program codes are listed in the summary reports. Data for the managerial program code is included in the statewide section of Table 1.

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 1

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal		FAMILY	Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T	LABOR	F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	183	0	0	2	0	14	0	0	7	194	0	0	17
01.0301	Ag Production Gen	3053	N/A	2957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	1118	82	17	2	14	30	0	0	0	1167	88	22	2
01.0401	Ag Prod & Proc, Genl	10	0	0	0	2	0	0	0	0	10	0	0	0
01.0402	Food Products	401	5	240	4	11	3	0	20	0	378	5	240	4
01.0502	Ag Services	375	118	0	594	0	50	33	0	34	408	108	0	601
01.0503	Ag Supp Marketing	1022	421	0	334	4	4	0	0	0	1038	421	0	334
01.0504	Animal Grooming	203	0	0	35	0	0	0	0	0	203	0	0	35
01.0505	Animal Training	321	22	0	6	0	39	0	0	0	267	22	0	6
01.0506	Horseshoeing	17	11	0	0	0	33	0	0	0	22	11	0	0
01.0601	Horticulture, Genl	2168	137	612	978	6	701	78	67	711	1958	185	647	1003
01.0602	Arboriculture	31	5	27	0	1	0	1	1	1	42	5	29	0
01.0604	Greenhouse Op & Mgt	832	89	72	43	5	86	0	15	0	796	43	96	52
01.0605	Landscaping	2519	239	1779	735	114	1012	191	504	268	2973	352	1965	796
01.0606	Nursery Op & Mgt	12	0	0	0	0	0	0	0	0	12	0	0	6
01.0607	Turf Management	40	0	20	2	0	8	0	0	0	42	0	20	2
02.0101	Ag Sciences, Genl	6	0	0	0	0	0	0	0	0	6	0	0	0
02.0302	Dairy Processing	4	3	0	0	0	0	1	0	0	5	3	0	0
02.0306	Food Technology	1	0	0	0	0	0	0	0	0	1	0	0	0
02.0503	Soil Conservation	20	2	0	0	0	0	0	0	0	20	2	0	0
03.0301	Fishing & Fisheries	9404	500	0	0	0	0	0	0	0	9404	500	0	0
03.0403	Forest Products Util	42	2	3	0	0	0	0	0	0	40	2	3	0
04.0601	Landscape Archit	23	6	13	6	0	11	6	0	0	41	0	6	6
06.0801	Insur & Risk Mgt	47	0	0	0	0	7	0	0	0	68	0	0	0
08.0501	Florist,Fm & Gdn Mkt	14	0	0	0	0	14	0	0	0	14	0	0	0
08.0502	Farm & Gdn Supp Mkt	366	49	90	126	22	65	0	7	14	359	59	142	148
08.0503	Floristry	757	151	0	28	42	193	42	0	0	799	83	0	0
08.0605	Whsl Food Marketing	238	6	9	0	22	12	0	0	0	253	6	9	0
08.1202	Ag Impl & Mach Mkt	82	0	0	2	0	4	0	0	0	86	0	0	2
13.0101	Education General	48	0	0	0	0	5	0	0	0	48	0	0	0
13.0406	Higher Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.0407	Comm Col Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.1301	Ag Education	44	0	0	0	0	0	0	0	0	44	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 1

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
14.0301	Ag Engineering	3	0	0	0	0	0	0	0	0	3	0	0	0
17.0501	Animal Technology	69	20	3	0	0	29	3	3	0	82	13	7	0
17.0512	Vet Assisting	202	95	29	26	0	52	16	3	13	218	88	29	26
18.2401	Veterinary Medicine	221	31	0	7	10	84	3	0	0	243	37	0	7
[illegible].0702	Entomology	4	0	0	0	0	0	0	0	0	4	0	0	0
31.0201	Outdoor Rec	8	0	0	0	0	0	0	0	0	8	0	0	0
31.0301	Parks & Rec Mgt	1	0	0	0	0	0	0	0	0	1	0	0	0
48.0402	Meat Cutting	38	0	0	0	9	0	0	0	0	19	0	0	0
49.0303	Comm Fishing Op	55	0	0	0	0	0	0	0	0	55	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 2

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	7	0	0	0	0	7	0	0	0	7	0	0	0
01.0301	Ag Production Gen	66	N/A	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	77	166	7	652	5	3	0	0	0	57	163	0	652
01.0401	Ag Prod & Proc, Genl	132	0	0	0	0	0	0	0	0	132	0	0	0
01.0402	Food Products	5162	53	73	0	0	228	24	0	0	5132	94	83	0
01.0502	Ag Services	423	116	7	74	0	34	15	0	11	417	107	10	74
01.0503	Ag Supp Marketing	1034	348	0	88	0	0	0	0	0	1034	348	0	88
01.0504	Animal Grooming	73	3	0	5	0	0	0	0	0	76	0	0	5
01.0505	Animal Training	22	0	0	0	6	3	0	0	0	26	0	0	0
01.0506	Horseshoeing	3	0	0	0	0	0	0	0	0	3	0	0	0
01.0601	Horticulture, Genl	95	7	34	43	3	46	7	20	20	95	7	53	50
01.0604	Greenhouse Op & Mgt	223	3	12	0	0	112	0	12	0	360	3	12	0
01.0605	Landscaping	507	136	287	357	43	217	90	95	279	513	124	255	342
01.0606	Nursery Op & Mgt	3	0	0	0	0	0	0	0	0	3	0	0	0
02.0302	Dairy Processing	398	0	41	0	3	28	0	41	0	424	0	54	0
03.0403	Forest Products Util	72	0	0	0	0	0	0	0	0	72	0	0	0
08.0501	Florist,Fm & Gdn Mkt	112	62	125	62	0	12	0	25	0	136	75	187	75
08.0502	Farm & Gdn Supp Mkt	310	198	41	80	3	7	7	34	13	310	211	54	82
08.0503	Floristry	2190	537	299	502	86	391	62	124	262	2127	524	287	576
08.0605	Whsl Food Marketing	1450	59	153	28	17	101	0	0	0	1291	75	153	45
13.0101	Education General	39	0	0	0	0	0	0	0	0	39	0	0	0
13.1301	Ag Education	40	0	0	0	0	1	0	0	0	40	0	0	0
15.0602	Food Proc Technology	83	0	0	0	0	0	0	0	0	14	0	0	0
17.0501	Animal Technology	78	18	0	0	18	21	3	0	0	78	18	0	0
17.0512	Vet Assisting	213	69	9	6	0	33	12	0	3	222	60	12	15
18.2401	Veterinary Medicine	333	21	15	6	0	30	6	3	3	336	30	21	0
31.0301	Parks & Rec Mgt	86	0	0	0	0	10	0	0	0	79	0	0	0
48.0402	Meat Cutting	899	33	133	0	0	150	0	0	0	831	0	133	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 3

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal		FAMILY	Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T	LABOR	F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	247	0	0	0	0	15	0	15	4	249	5	24	13
01.0205	Ag Struct/Equip/Fac	11	5	11	0	0	16	5	6	0	16	5	11	0
01.0301	Ag Production Gen	5746	N/A	7959	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	137	2	2	0	20	39	0	0	0	231	2	2	0
01.0304	Crop Production	9	10	3	0	0	1	2	0	0	10	12	3	0
01.0305	Game Farm Management	10	0	10	5	5	5	0	0	5	10	0	14	5
01.0399	Ag Production, Other	3	0	0	0	0	0	0	0	0	3	0	0	0
01.0401	Ag Prod & Proc, Genl	49	0	0	3	0	0	0	0	0	49	0	0	3
01.0402	Food Products	455	49	187	38	56	53	7	169	2	469	56	187	52
01.0502	Ag Services	388	93	343	40	9	20	18	4	2	390	91	361	51
01.0503	Ag Supp Marketing	756	320	0	237	0	0	0	0	0	729	320	0	237
01.0504	Animal Grooming	114	19	0	25	0	0	0	0	0	114	19	0	25
01.0505	Animal Training	38	5	0	0	5	19	0	0	0	23	5	0	0
01.0601	Horticulture, Genl	686	55	653	100	2	202	13	258	43	836	66	701	110
01.0602	Arboriculture	227	16	54	13	8	47	12	33	0	244	12	71	15
01.0604	Greenhouse Op & Mgt	652	69	213	56	20	147	28	0	21	767	76	131	63
01.0605	Landscaping	1282	155	965	330	37	282	61	401	163	1334	152	976	293
01.0607	Turf Management	15	2	4	0	0	6	0	4	0	13	0	4	0
02.0101	Ag Sciences, Genl	150	0	0	0	0	0	0	0	0	150	0	0	0
02.0301	Food Sciences, Genl	20	0	0	0	0	0	0	0	0	20	0	0	0
02.0302	Dairy Processing	174	0	0	0	0	8	0	0	0	167	0	0	0
02.0306	Food Technology	7	0	0	0	7	0	0	0	0	7	0	0	0
03.0202	Conservation	3	0	0	0	0	3	0	0	0	6	0	0	0
03.0402	Forest Production	21	0	0	0	0	0	0	0	0	21	0	0	0
03.0403	Forest Products Util	102	18	0	0	8	0	0	0	0	93	18	0	0
03.0405	Logging	35	0	0	4	0	0	0	0	0	35	0	0	4
04.0601	Landscape Archit	22	0	0	0	0	0	0	7	7	29	7	0	0
06.0301	Banking and Finance	5	0	0	0	0	1	0	0	0	5	0	0	0
06.0801	Insur & Risk Mgt	0	5	0	0	0	0	0	0	0	0	5	0	0
08.0502	Farm & Gdn Supp Mkt	808	26	111	93	73	139	0	40	60	820	26	128	128
08.0503	Floristry	660	198	180	353	54	168	30	42	89	630	234	180	413
08.0605	Whsl Food Marketing	371	6	17	0	0	0	0	0	0	253	6	17	0
08.1202	Ag Impl & Mach Mkt	144	29	8	36	0	0	0	4	8	145	26	11	43

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 3

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
13.0101	Education General	58	5	0	0	0	7	0	0	0	58	5	0	0
13.0407	Comm Col Ed Admin	2	0	0	0	0	0	0	0	0	2	0	0	0
13.1301	Ag Education	31	0	0	0	0	3	0	0	0	31	0	0	0
14.0301	Ag Engineering	42	0	0	0	0	6	0	0	0	45	0	0	0
15.0602	Food Proc Technology	20	0	0	0	0	0	0	0	0	15	0	0	0
17.0501	Animal Technology	90	16	2	0	2	13	2	0	2	96	18	2	2
17.0512	Vet Assisting	125	49	9	11	0	22	16	2	4	137	45	7	13
18.2401	Veterinary Medicine	177	16	4	4	2	29	7	5	7	177	11	2	9
31.0201	Outdoor Rec	4	0	0	0	0	2	0	0	0	6	0	0	0
48.0402	Meat Cutting	60	6	0	0	54	12	12	0	0	48	12	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 4

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T	LABOR	F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	157	6	4	6	0	47	0	4	6	184	10	4	0
01.0205	Ag Struct/Equip/Fac	9	0	0	0	0	0	0	0	0	9	0	0	0
01.0301	Ag Production Gen	6932	N/A	5931	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	155	20	10	4	12	42	8	0	0	178	27	10	3
01.0304	Crop Production	123	4	0	0	0	4	0	0	0	127	0	0	0
01.0399	Ag Production, Other	8	0	0	3	0	8	0	6	3	8	0	0	3
01.0401	Ag Prod & Proc, Genl	12	23	0	0	0	0	0	0	0	12	23	0	0
01.0402	Food Products	409	110	0	35	10	18	0	0	0	433	105	0	23
01.0502	Ag Services	93	17	3	4	0	7	3	0	0	102	14	3	4
01.0503	Ag Supp Marketing	301	77	0	0	0	0	0	0	0	226	77	0	0
01.0504	Animal Grooming	3	0	0	4	0	3	0	0	0	6	0	0	4
01.0305	Animal Training	21	0	0	0	5	5	0	0	0	21	0	0	0
01.0601	Horticulture, Genl	167	56	92	215	15	45	38	15	70	207	94	116	262
01.0602	Arboriculture	15	0	0	0	0	0	0	0	0	15	0	0	0
01.0604	Greenhouse Op & Mgt	252	28	57	35	0	9	0	47	28	291	28	56	44
01.0605	Landscaping	197	12	118	115	35	43	4	56	34	254	12	158	131
01.0606	Nursery Op & Mgt	0	0	0	0	0	9	0	0	0	9	0	0	0
01.0607	Turf Management	15	0	22	13	0	3	0	12	0	15	0	34	13
02.0302	Dairy Processing	62	3	8	2	0	1	0	0	0	62	3	8	2
02.0306	Food Technology	8	2	0	0	0	1	0	0	0	8	0	0	0
02.0404	Ornamental Hortic	8	0	0	0	0	0	0	0	0	8	0	0	0
03.0403	Forest Products Util	105	12	4	8	4	0	0	0	0	101	12	4	8
03.0405	Logging	193	14	14	0	0	28	0	0	0	193	14	14	0
03.0506	Forest Management	31	0	0	0	0	0	0	0	0	31	0	0	0
04.0601	Landscape Archit	39	0	0	0	0	10	0	0	0	84	0	0	0
06.0301	Banking and Finance	8	0	0	0	0	3	0	0	0	8	0	0	0
06.0801	Insur & Risk Mgt	21	17	0	0	0	0	0	0	0	26	17	0	0
08.0502	Farm & Gdn Supp Mkt	189	11	39	33	11	15	0	0	6	195	3	31	24
08.0503	Floristry	323	41	81	122	18	18	0	17	64	336	52	75	122
08.0605	Whsl Food Marketing	156	0	981	0	9	9	0	981	0	156	0	981	0
08.1202	Ag Impl & Mach Mkt	45	0	0	0	4	12	0	0	0	61	0	0	0
09.0401	Journalism	10	0	0	0	0	5	0	0	0	10	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 4

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
13.0101	Education General	107	1	0	0	0	13	0	0	0	107	1	0	0
13.0406	Higher Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.0407	Comm Col Ed Admin	2	0	0	0	0	0	0	0	0	2	0	0	0
13.1301	Ag Education	32	5	0	0	0	1	1	0	0	31	3	0	0
14.0301	Ag Engineering	8	0	24	0	0	0	0	0	0	0	0	16	0
15.0602	Food Proc Technology	1	0	0	0	0	0	0	0	0	1	0	0	0
17.0501	Animal Technology	35	0	0	0	0	13	0	0	0	38	0	0	0
17.0512	Vet Assisting	46	6	0	6	3	3	0	0	0	55	3	0	6
18.2401	Veterinary Medicine	85	0	0	0	3	16	0	0	0	90	0	0	0
26.0501	Microbiology	0	8	0	0	0	0	0	0	0	0	8	0	0
31.0201	Outdoor Rec	14	0	0	0	0	6	0	0	0	14	0	0	0
31.0301	Parks & Rec Mgt	2	0	1	0	0	0	0	0	0	2	0	1	0
48.0402	Meat Cutting	18	0	9	0	9	0	0	9	0	27	0	9	9

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 5

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	183	3	0	2	0	17	4	0	0	181	0	0	18
01.0205	Ag Struct/Equip/Fac	2	0	0	0	0	0	0	0	0	2	0	0	0
01.0301	Ag Production Gen	4300	N/A	5380	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	13	1	3	0	0	0	0	0	0	13	1	3	0
01.0399	Ag Production, Other	9	0	0	0	4	0	0	0	0	9	0	0	0
01.0401	Ag Prod & Proc, Genl	6	5	0	1	0	0	0	0	0	5	5	0	2
01.0402	Food Products	121	10	12	0	0	0	0	0	0	124	10	12	3
01.0502	Ag Services	51	8	0	5	0	0	0	0	0	58	8	0	5
01.0503	Ag Supp Marketing	101	25	4	22	3	0	0	0	0	105	25	4	22
01.0504	Animal Grooming	2	7	0	3	0	0	0	0	0	2	7	0	3
01.0505	Animal Training	1	1	0	0	0	0	0	0	0	1	0	0	0
01.0601	Horticulture, Genl	29	3	27	14	0	0	0	0	0	29	3	30	17
01.0602	Arboriculture	14	0	9	0	0	0	0	5	0	14	0	16	0
01.0604	Greenhouse Op & Mgt	13	1	0	5	0	0	0	0	0	13	1	0	7
01.0605	Landscaping	25	6	19	49	0	5	0	6	0	25	6	10	47
01.0607	Turf Management	0	0	2	6	0	0	0	0	0	0	0	2	6
02.0302	Dairy Processing	30	0	0	1	0	0	0	0	0	30	0	0	1
02.0503	Soil Conservation	2	0	0	0	0	0	0	0	0	2	0	0	0
03.0402	Forest Production	5	0	0	3	0	5	0	0	0	5	0	0	3
03.0403	Forest Products Util	165	3	7	0	17	13	0	0	0	178	3	7	0
03.0405	Logging	545	69	5	0	31	144	21	0	0	588	53	5	0
03.0406	Pulp & Paper Prod	16	0	0	0	0	16	0	0	0	16	0	0	0
03.0506	Forest Management	25	5	0	0	5	17	0	0	0	31	5	0	0
06.0301	Banking and Finance	2	0	0	0	0	0	0	0	0	2	0	0	0
06.0801	Insur & Risk Mgt	2	0	0	0	0	0	0	0	0	2	0	0	0
08.0502	Farm & Gdn Supp Mkt	127	8	9	6	6	21	0	9	6	127	4	13	10
08.0503	Floristry	87	0	0	5	10	0	0	0	5	87	3	0	5
08.0605	Whsl Food Marketing	16	2	43	0	0	2	0	43	0	18	2	22	0
08.1202	Ag Impl & Mach Mkt	89	3	0	0	3	12	3	0	0	95	3	0	0
13.0101	Education General	47	0	0	0	0	5	0	0	0	47	0	0	0
13.0407	Comm Col Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.1301	Ag Education	20	2	0	0	0	3	0	0	0	20	2	0	0
14.0301	Ag Engineering	40	0	0	0	8	4	0	0	0	44	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 5

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
15.0602	Food Proc Technology	2	0	0	1	0	0	0	0	0	2	0	0	1
17.0501	Animal Technology	11	0	0	0	0	0	0	0	0	6	0	0	0
17.0512	Vet Assisting	11	3	3	0	3	0	0	0	0	11	3	3	0
18.2401	Veterinary Medicine	26	3	6	3	3	6	3	0	0	17	3	9	0
31.0201	Outdoor Rec	0	0	0	2	0	0	0	0	0	0	0	0	2
48.0402	Meat Cutting	5	1	2	0	0	1	0	1	0	4	1	2	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 6

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	136	0	0	0	0	25	0	4	3	127	0	10	0
01.0205	Ag Struct/Equip/Fac	47	7	0	5	0	4	0	0	0	67	7	0	5
01.0301	Ag Production Gen	5719	N/A	4682	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	7	0	0	0	0	0	0	0	0	7	0	0	0
01.0399	Ag Production, Other	0	0	0	4	8	0	0	0	0	0	0	0	4
01.0401	Ag Prod & Proc, Genl	18	39	0	3	10	0	0	0	0	9	16	0	0
01.0402	Food Products	310	11	3	13	3	0	3	0	3	314	11	5	23
01.0502	Ag Services	51	2	2	4	0	0	2	0	0	48	2	5	4
01.0503	Ag Supp Marketing	118	13	4	4	4	0	0	0	4	110	13	4	4
01.0504	Animal Grooming	0	2	0	2	0	0	0	0	0	0	2	0	2
01.0601	Horticulture, Genl	3	0	0	3	2	0	0	0	0	3	0	0	3
01.0602	Arboriculture	30	0	0	0	0	0	0	0	0	30	0	0	0
01.0604	Greenhouse Op & Mgt	4	0	0	0	0	0	0	0	0	4	0	0	0
01.0605	Landscaping	24	0	0	8	0	0	0	0	0	24	0	0	8
01.0607	Turf Management	0	0	1	10	1	0	0	0	5	0	0	1	10
02.0302	Dairy Processing	169	0	3	0	0	0	0	0	0	172	0	2	0
02.0306	Food Technology	3	3	0	0	0	0	0	0	0	3	3	0	0
03.0403	Forest Products Util	68	6	20	0	4	2	0	0	0	70	6	20	0
03.0404	Forest Prod Process	1	0	0	0	0	0	0	0	0	1	0	0	0
03.0405	Logging	236	8	8	16	0	25	0	0	0	244	8	0	0
03.0506	Forest Management	3	0	0	0	0	0	0	0	0	3	0	0	0
06.0301	Banking and Finance	12	0	0	0	0	1	0	0	0	13	0	0	0
06.0801	Insur & Risk Mgt	13	99	0	0	0	0	0	0	0	15	103	0	0
08.0502	Farm & Gdn Supp Mkt	132	8	0	0	0	2	0	0	0	136	8	0	0
08.0503	Floristry	33	3	3	12	6	0	0	0	0	30	6	3	9
08.0605	Whsl Food Marketing	5	0	0	0	0	0	0	0	0	5	0	0	0
08.1202	Ag Impl & Mach Mkt	111	0	6	0	0	17	0	3	3	127	0	0	3
09.0201	Advertising	4	4	0	0	0	0	0	0	0	4	4	0	0
09.0401	Journalism	6	6	0	0	0	0	0	0	0	9	9	0	0
13.0101	Education General	30	0	0	0	0	3	0	0	0	30	0	0	0
13.0406	Higher Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.0407	Comm Col Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.1301	Ag Education	28	0	0	0	0	10	0	0	0	28	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 6

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
14.0301	Ag Engineering	28	0	0	0	0	0	0	0	0	28	0	0	0
15.0602	Food Proc Technology	42	0	1	1	0	0	0	1	0	43	0	1	1
17.0501	Animal Technology	7	1	0	0	0	3	0	0	0	7	0	0	0
17.0511	Veterinarian Aide	1	1	0	0	0	0	1	0	0	0	1	0	0
17.0512	Vet Assisting	15	2	0	3	0	1	0	0	0	14	2	0	3
18.2401	Veterinary Medicine	28	2	0	0	0	3	0	0	0	29	2	0	0
31.0201	Outdoor Rec	8	0	1	2	1	0	0	0	1	8	0	1	2
48.0402	Meat Cutting	4	0	0	0	0	0	0	0	0	4	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 7

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	103	0	14	0	0	56	0	0	14	117	0	28	14
01.0301	Ag Production Gen	4887	N/A	4596	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	117	14	16	98	8	73	20	20	8	101	14	16	98
01.0305	Game Farm Management	1	0	0	0	0	0	0	0	0	1	0	0	0
01.0399	Ag Production, Other	2	0	0	0	0	0	0	0	0	2	0	0	0
01.0402	Food Products	155	20	4	8	3	12	0	0	0	166	22	0	8
01.0403	Nonfood Products	11	0	0	0	0	0	0	0	0	11	0	0	0
01.0502	Ag Services	72	25	0	3	0	5	4	0	0	72	25	0	3
01.0503	Ag Supp Marketing	269	13	1	1	0	24	0	0	0	293	13	1	1
01.0504	Animal Grooming	2	5	0	2	0	0	0	0	0	2	5	0	2
01.0505	Animal Training	17	0	0	0	0	0	0	0	0	17	0	0	0
01.0601	Horticulture, Genl	42	22	2	46	0	4	4	0	4	42	22	2	50
01.0602	Arboriculture	0	0	6	0	0	0	0	0	0	0	0	6	0
01.0604	Greenhouse Op & Mgt	24	24	0	0	0	0	0	0	0	24	24	0	0
01.0605	Landscaping	90	0	48	49	0	45	0	27	4	97	0	63	46
01.0607	Turf Management	9	2	9	16	0	0	0	9	2	9	2	9	16
02.0302	Dairy Processing	148	18	0	3	0	2	0	0	0	148	18	0	3
03.0403	Forest Products Util	50	0	0	2	0	6	0	0	0	38	0	0	2
03.0405	Logging	12	8	0	0	0	0	0	0	0	12	8	0	0
06.0301	Banking and Finance	9	0	0	0	0	3	0	0	0	9	0	0	0
06.0801	Insur & Risk Mgt	11	11	0	0	0	0	0	0	0	16	11	0	0
08.0502	Farm & Gdn Supp Mkt	95	0	0	0	0	8	0	0	0	85	0	0	0
08.0503	Floristry	78	30	0	36	8	4	22	0	18	78	30	0	36
08.0605	Whsl Food Marketing	132	0	0	0	3	7	0	0	0	161	0	0	0
08.1202	Ag Impl & Mach Mkt	98	0	0	0	0	42	0	0	14	112	0	0	14
13.0101	Education General	50	0	0	0	0	5	0	0	0	50	0	0	0
13.0406	Higher Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.0407	Comm Col Ed Admin	2	0	0	0	0	0	0	0	0	2	0	0	0
13.1301	Ag Education	20	0	0	0	0	7	0	0	0	20	0	0	0
14.0301	Ag Engineering	60	0	0	0	0	0	0	0	0	70	0	0	0
15.0602	Food Proc Technology	20	0	0	0	0	0	0	0	0	21	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 7

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
17.0501	Animal Technology	19	0	0	0	0	4	0	0	0	19	0	0	0
17.0512	Vet Assisting	8	15	4	0	4	4	8	4	0	8	15	4	0
18.2401	Veterinary Medicine	38	0	0	0	4	11	0	0	0	38	0	0	0
31.0201	Outdoor Rec	7	0	0	0	0	2	0	0	0	7	0	0	0
31.0301	Parks & Rec Mgt	4	0	0	0	0	0	0	0	0	4	0	0	0
48.0402	Meat Cutting	3	0	0	0	0	0	0	0	0	3	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 8

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	177	0	3	12	0	21	0	0	4	180	0	3	8
01.0205	Ag Struct/Equip/Fac	15	0	0	0	0	0	0	0	0	23	0	0	0
01.0301	Ag Production Gen	6833	N/A	5890	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	73	10	3	23	2	4	7	3	4	86	7	3	23
01.0305	Game Farm Management	0	0	0	2	2	0	0	0	0	0	0	0	2
01.0399	Ag Production, Other	1	0	1	0	0	0	0	0	0	1	0	1	0
01.0401	Ag Prod & Proc, Genl	77	0	1	44	8	2	0	0	25	85	0	2	44
01.0402	Food Products	413	18	0	3	11	22	0	0	0	437	23	3	9
01.0502	Ag Services	114	11	9	11	0	8	0	0	0	97	11	9	11
01.0503	Ag Supp Marketing	388	35	1	[illegible]	0	38	0	0	0	372	35	1	1
01.0504	Animal Grooming	4	8	0	2	0	0	0	0	0	4	8	0	2
01.0601	Horticulture, Genl	39	7	36	9	0	0	0	13	0	47	7	28	9
01.0602	Arboriculture	60	0	0	0	0	0	0	0	0	30	0	0	0
01.0604	Greenhouse Op & Mgt	43	2	13	10	0	2	0	0	0	43	2	13	10
01.0605	Landscaping	47	21	25	5	2	21	19	5	5	45	25	25	7
01.0607	Turf Management	6	6	34	17	0	0	6	11	0	6	6	34	17
02.0101	Ag Sciences, Genl	6	4	0	0	0	0	0	0	0	6	4	0	0
02.0302	Dairy Processing	115	0	2	0	2	19	0	0	0	114	0	2	0
02.0306	Food Technology	20	0	0	0	0	0	0	0	0	20	0	0	0
03.0302	Fisheries	0	1	0	0	1	0	0	0	0	0	1	0	0
03.0402	Forest Production	4	0	0	0	0	0	0	0	0	5	0	0	0
03.0403	Forest Products Util	278	10	0	9	0	6	6	0	0	282	7	0	9
03.0405	Logging	143	0	5	5	0	19	0	0	0	134	0	5	5
03.0506	Forest Management	5	5	0	9	0	0	0	0	9	5	5	0	9
06.0801	Insur & Risk Mgt	21	13	0	0	0	13	13	0	0	25	25	0	0
08.0501	Florist,Fm & Gdn Mkt	4	0	0	0	0	0	0	0	0	4	0	0	0
08.0502	Farm & Gdn Supp Mkt	164	26	28	0	0	10	0	4	0	156	18	28	0
08.0503	Floristry	99	13	0	20	0	25	0	0	0	85	17	0	13
08.0605	Whsl Food Marketing	35	0	0	0	0	0	0	0	0	27	0	0	0
08.1202	Ag Impl & Mach Mkt	109	4	0	0	0	18	0	0	0	109	4	0	0
13.0101	Education General	64	0	0	0	0	6	0	0	0	64	0	0	0
13.0406	Higher Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.0407	Comm Col Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.1301	Ag Education	30	0	0	0	0	1	0	0	0	30	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 8

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal		FAMILY	Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T	LABOR	F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
14.0301	Ag Engineering	16	0	0	0	0	0	0	0	0	34	0	0	0
15.0602	Food Proc Technology	99	0	0	0	4	0	0	0	0	97	0	0	0
17.0501	Animal Technology	91	2	0	0	0	7	0	0	0	93	2	0	2
17.0511	Veterinarian Aide	1	0	0	0	0	1	0	0	0	1	0	0	0
17.0512	Vet Assisting	15	2	2	4	0	4	2	2	0	17	2	2	4
18.2301	Toxicology(Clinical)	14	0	0	0	0	0	0	0	0	14	0	0	0
18.2401	Veterinary Medicine	42	2	0	0	4	20	0	0	0	46	2	0	0
26.0201	Biochem & Biophysics	18	0	0	0	0	0	0	0	0	18	0	0	0
31.0201	Outdoor Rec	6	0	9	0	9	0	0	0	0	6	0	9	0
31.0301	Parks & Rec Mgt	1	0	0	0	0	0	0	0	0	1	0	0	0
48.0402	Meat Cutting	9	0	0	0	0	0	0	0	0	2	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 9

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	152	4	7	13	0	33	0	0	0	161	4	7	13
01.0205	Ag Struct/Equip/Fac	22	0	0	0	0	0	0	0	0	35	0	0	0
01.0301	Ag Production Gen	6741	N/A	5697	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	136	177	0	0	2	20	10	0	0	154	193	0	0
01.0305	Game Farm Management	5	0	5	2	0	0	0	5	0	1	0	5	2
01.0399	Ag Production, Other	12	0	5	2	2	0	0	0	2	11	0	2	5
01.0401	Ag Prod & Proc, Genl	16	102	0	0	10	1	0	0	0	16	100	0	0
01.0402	Food Products	327	54	27	27	2	16	5	0	0	258	51	27	27
01.0502	Ag Services	324	63	7	58	7	18	3	0	0	335	60	7	61
01.0503	Ag Supp Marketing	230	26	14	1	0	7	0	0	0	190	26	8	1
01.0504	Animal Grooming	2	6	0	3	0	0	0	0	0	2	6	0	3
01.0505	Animal Training	2	1	0	0	0	0	0	0	0	2	1	0	0
01.0601	Horticulture, Genl	64	17	77	91	3	8	0	0	3	61	0	93	74
01.0602	Arboriculture	6	0	10	13	0	7	0	14	10	10	0	10	16
01.0604	Greenhouse Op & Mgt	39	6	23	37	0	0	0	0	0	50	6	23	37
01.0605	Landscaping	246	26	117	103	8	107	5	49	31	283	37	140	118
01.0607	Turf Management	23	6	5	26	0	4	2	0	16	21	8	5	22
02.0101	Ag Sciences, Genl	253	16	0	0	0	40	2	0	0	253	16	0	0
02.0302	Dairy Processing	133	19	3	43	0	13	0	0	17	138	19	3	51
03.0302	Fisheries	4	0	0	0	2	0	0	0	0	4	0	0	0
03.0401	Forest Prod/Proc Gen	35	5	0	0	0	4	1	0	0	35	5	0	0
03.0403	Forest Products Util	37	4	0	0	0	11	2	0	0	37	4	0	0
03.0405	Logging	97	0	0	0	9	0	0	0	0	109	0	0	0
04.0601	Landscape Archit	7	2	5	0	0	0	0	0	0	6	2	5	0
06.0301	Banking and Finance	8	0	0	0	0	0	0	0	0	8	0	0	0
06.0801	Insur & Risk Mgt	55	40	0	0	0	7	0	0	0	61	40	0	0
08.0502	Farm & Gdn Supp Mkt	254	19	0	17	10	56	3	0	0	283	22	0	20
08.0503	Floristry	333	88	0	66	22	66	16	0	33	332	99	0	66
08.0605	Whsl Food Marketing	159	44	22	22	19	7	29	0	15	157	48	0	22
08.1202	Ag Impl & Mach Mkt	97	8	0	4	4	8	0	0	0	101	8	0	4
09.0401	Journalism	14	7	0	0	0	0	0	0	0	14	7	0	0
13.0101	Education General	888	17	0	0	0	32	1	0	0	888	17	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 9

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal		FAMILY	Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T	LABOR	F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
13.0401	Ed Admin, General	32	0	0	0	0	0	0	0	0	32	0	0	0
13.0406	Higher Ed Admin	49	0	0	0	0	4	0	0	0	49	0	0	0
13.0407	Comm Col Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.1301	Ag Education	22	1	0	0	0	9	0	0	0	22	1	0	0
14.0301	Ag Engineering	58	0	0	0	0	53	0	0	0	75	0	0	4
15.0602	Food Proc Technology	5	2	0	0	0	4	0	0	0	5	2	0	0
17.0501	Animal Technology	258	5	0	0	0	57	3	0	0	45	2	0	0
17.0511	Veterinarian Aide	2	0	0	0	0	2	0	0	0	2	0	0	0
17.0512	Vet Assisting	34	32	0	2	0	13	9	0	0	32	32	0	0
18.2401	Veterinary Medicine	83	0	0	4	2	12	2	0	0	83	4	0	0
26.0701	Zoology, General	3	0	0	0	0	0	0	0	0	3	0	0	0
31.0201	Outdoor Rec	8	0	0	0	6	0	0	0	0	8	0	0	0
31.0301	Parks & Rec Mgt	7	0	0	0	0	0	0	0	0	7	0	0	0
48.0402	Meat Cutting	30	0	0	13	0	0	0	0	0	33	0	0	13

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 10

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	420	22	34	17	0	101	0	23	4	480	25	66	24
01.0205	Ag Struct/Equip/Fac	24	0	0	0	0	9	0	0	0	24	0	0	0
01.0301	Ag Production Gen	11585	0	22603	0	0	0	0	0	0	8	0	0	0
01.0302	Animal Production	88	3	6	5	1	14	0	4	3	92	3	6	5
01.0304	Crop Production	0	0	0	9	0	0	0	0	0	0	0	0	9
01.0305	Game Farm Management	2	0	0	7	0	0	0	0	0	2	0	0	5
01.0399	Ag Production, Other	6	8	55	0	3	3	0	0	0	6	8	55	0
01.0401	Ag Prod & Proc, Genl	22	1	0	0	2	0	0	0	0	22	1	0	0
01.0402	Food Products	702	107	9	113	27	17	7	0	5	712	118	9	98
01.0403	Nonfood Products	8	0	0	0	0	0	0	0	0	8	0	0	0
01.0502	Ag Services	188	75	2	11	8	26	6	2	2	193	92	4	14
01.0503	Ag Supp Marketing	1836	41	8	29	8	24	0	0	0	1778	25	8	12
01.0504	Animal Grooming	22	1	0	22	0	0	0	0	0	22	1	0	22
01.0505	Animal Training	19	0	0	4	0	10	0	0	0	20	0	0	4
01.0506	Horseshoeing	3	0	0	0	0	3	0	0	0	3	0	0	0
01.0601	Horticulture, Genl	371	45	419	306	0	177	0	3	31	429	53	411	286
01.0602	Arboriculture	31	9	18	9	0	0	9	9	0	31	9	18	9
01.0604	Greenhouse Op & Mgt	425	8	55	20	12	70	0	12	0	426	8	82	20
01.0605	Landscaping	505	27	221	82	17	234	18	99	32	566	20	299	109
01.0607	Turf Management	30	0	26	6	0	4	0	6	0	36	0	26	2
02.0101	Ag Sciences, Genl	3	0	0	0	0	0	0	0	0	3	0	0	0
02.0302	Dairy Processing	132	17	0	0	0	0	0	0	0	132	17	0	0
02.0306	Food Technology	4	0	0	0	0	0	0	0	0	4	0	0	0
02.0401	Plant Sciences, Genl	19	0	0	0	0	3	0	0	0	21	0	0	0
03.0403	Forest Products Util	35	4	0	0	6	17	0	0	0	37	4	0	0
03.0405	Logging	21	0	0	0	0	0	0	0	0	21	0	0	0
03.0506	Forest Management	0	0	0	0	0	0	0	0	0	2	0	0	0
04.0601	Landscape Archit	9	0	0	0	0	0	0	0	0	18	0	0	0
06.0301	Banking and Finance	35	0	0	0	0	2	0	0	0	36	0	0	0
06.0801	Insur & Risk Mgt	38	17	0	0	0	0	0	0	0	38	17	0	0
08.0502	Farm & Gdn Supp Mkt	404	155	48	171	20	63	66	48	159	424	188	57	204
08.0503	Floristry	333	52	32	106	32	40	4	0	12	319	60	24	126
08.0605	Whsl Food Marketing	126	13	30	15	0	15	0	3	9	126	13	30	15
08.1202	Ag Impl & Mach Mkt	361	0	0	7	0	76	4	4	4	349	0	0	11

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 10

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
13.0101	Education General	54	0	0	0	0	9	0	0	0	54	0	0	0
13.1301	Ag Education	51	1	0	0	0	3	0	0	0	51	1	0	0
14.0301	Ag Engineering	72	0	5	0	5	5	0	0	0	81	0	5	0
15.0602	Food Proc Technology	23	1	0	0	0	1	0	0	0	23	0	0	0
15.0802	Ag Equip Tech	6	0	0	0	0	0	0	0	0	6	0	0	0
17.0501	Animal Technology	45	11	0	0	2	15	2	0	0	47	13	0	0
17.0511	Veterinarian Aide	2	0	0	0	0	0	0	0	0	2	0	0	0
17.0512	Vet Assisting	55	11	4	0	2	10	0	0	0	64	15	4	2
18.2401	Veterinary Medicine	119	4	0	0	0	25	0	0	0	134	2	0	0
31.0201	Outdoor Rec	3	0	14	0	0	0	0	2	0	3	0	14	0
31.0301	Parks & Rec Mgt	13	0	1	0	0	3	0	1	0	15	0	1	0
48.0402	Meat Cutting	44	2	0	0	0	0	0	0	0	39	2	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 11

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	104	0	18	34	0	12	0	0	18	113	0	22	52
01.0205	Ag Struct/Equip/Fac	1	0	0	0	0	0	0	0	0	1	0	0	0
01.0301	Ag Production Gen	3363	N/A	4118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	11	4	0	2	4	0	0	0	0	11	4	0	2
01.0401	Ag Prod & Proc. Genl	5	6	0	0	0	0	0	0	0	5	6	0	0
01.0402	Food Products	944	85	0	12	9	1	0	0	0	995	49	0	10
01.0502	Ag Services	23	11	0	2	0	2	0	0	0	25	11	0	2
01.0503	Ag Supp Marketing	54	0	0	0	0	0	0	0	0	54	0	0	0
01.0504	Animal Grooming	0	2	0	2	0	0	0	0	0	0	2	0	2
01.0601	Horticulture, Genl	41	0	11	14	5	43	0	8	0	41	10	11	24
01.0602	Arboriculture	3	0	0	0	3	0	0	0	0	3	0	0	0
01.0604	Greenhouse Op & Mgt	45	3	17	8	3	8	0	12	6	48	3	17	8
01.0605	Landscaping	87	0	4	1	20	95	15	0	60	107	0	3	1
01.0607	Turf Management	2	0	12	0	0	0	0	0	0	2	0	12	0
02.0302	Dairy Processing	66	3	0	0	0	0	0	0	0	66	3	0	0
02.0306	Food Technology	9	0	0	0	0	0	0	0	0	9	0	0	0
03.0403	Forest Products Util	29	4	3	0	1	0	0	0	0	34	4	3	0
03.0405	Logging	0	0	5	0	0	0	0	0	0	0	0	11	3
04.0601	Landscape Archit	0	0	1	0	0	0	0	0	0	0	0	1	0
08.0502	Farm & Gdn Supp Mkt	84	69	2	16	2	10	0	0	0	104	69	2	16
08.0503	Floristry	51	9	6	24	21	3	0	6	0	45	6	9	30
08.0605	Whsl Food Marketing	31	1	0	0	0	0	0	0	0	31	1	0	0
08.1202	Ag Impl & Mach Mkt	136	0	0	0	6	0	0	0	0	111	0	0	0
13.0101	Education General	19	0	0	0	0	2	0	0	0	19	0	0	0
13.1301	Ag Education	17	2	0	0	0	2	0	0	0	17	2	0	0
14.0301	Ag Engineering	20	0	0	0	0	3	0	0	0	17	0	0	0
15.0602	Food Proc Technology	9	0	0	0	0	0	0	0	0	9	0	0	0
15.0802	Ag Equip Tech	5	0	1	0	0	0	0	0	0	3	0	1	0
17.0501	Animal Technology	2	0	0	0	0	0	0	0	0	2	0	0	0
17.0511	Veterinarian Aide	2	1	0	0	0	0	0	0	0	0	0	0	0
17.0512	Vet Assisting	6	2	0	4	2	4	0	0	0	6	2	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 11

		1980									1982			
INSTRUCTIONAL PROGRAMS		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
18.2401	Veterinary Medicine	12	0	0	0	0	4	0	0	0	10	0	0	0
48.0402	Meat Cutting	17	1	0	0	0	0	0	0	0	20	1	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 12

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T	LABOR	F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	188	6	0	0	0	18	0	0	0	177	9	0	3
01.0205	Ag Struct/Equip/Fac	7	0	0	0	0	0	0	0	0	14	0	7	7
01.0301	Ag Production Gen	6018	0	11771	0	0	0	0	50	0	0	0	55	0
01.0302	Animal Production	81	18	2	4	4	2	0	0	0	85	18	2	4
01.0304	Crop Production	0	0	19	0	0	0	0	0	0	0	0	19	0
01.0305	Game Farm Management	14	12	0	0	0	0	0	0	0	4	12	0	0
01.0399	Ag Production, Other	2	0	2	0	0	0	0	0	0	2	0	2	0
01.0401	Ag Prod & Proc, Genl	32	4	4	2	4	0	0	0	0	22	4	2	2
01.0402	Food Products	212	54	19	19	74	25	37	0	0	209	54	19	19
01.0403	Nonfood Products	2	0	0	0	4	0	0	0	0	2	0	0	0
01.0502	Ag Services	164	20	29	12	8	22	7	4	3	157	18	29	18
01.0503	Ag Supp Marketing	159	39	0	25	6	4	0	0	0	162	39	0	25
01.0504	Animal Grooming	25	3	0	19	0	0	0	0	0	25	3	0	19
01.0505	Animal Training	1	0	0	0	0	0	0	0	0	1	0	0	0
01.0601	Horticulture, Genl	475	51	592	1213	9	30	0	152	125	461	39	561	1232
01.0602	Arboriculture	24	0	0	0	0	0	0	0	0	80	0	0	0
01.0604	Greenhouse Op & Mgt	492	0	133	71	0	20	0	31	0	450	0	166	74
01.0605	Landscaping	603	188	393	314	44	357	168	277	224	584	188	463	334
01.0606	Nursery Op & Mgt	4	0	0	0	0	4	0	0	0	9	0	0	[illegible]
01.0607	Turf Management	28	0	32	0	0	0	0	11	0	28	0	32	0
02.0302	Dairy Processing	249	6	2	0	0	86	0	2	0	299	6	2	0
02.0404	Ornamental Hortic	4	0	0	0	0	0	0	0	0	4	0	0	0
03.0301	Fishing & Fisheries	0	1500	0	0	0	0	0	0	0	0	1500	0	0
03.0403	Forest Products Util	78	0	6	0	0	12	0	6	0	118	0	6	0
03.0405	Logging	30	0	0	0	0	0	0	0	0	33	0	0	0
04.0601	Landscape Archit	6	0	0	0	0	6	0	0	0	6	0	0	0
06.0801	Insur & Risk Mgt	20	0	0	0	0	0	0	0	0	31	0	0	4
08.0502	Farm & Gdn Supp Mkt	385	15	30	60	22	115	6	18	39	350	15	42	90
08.0503	Floristry	376	50	57	56	81	100	25	19	63	307	31	69	62
08.0605	Whsl Food Marketing	164	28	46	65	9	0	0	0	0	169	28	46	65
08.1202	Ag Impl & Mach Mkt	[illegible]	0	0	3	0	3	0	0	0	103	0	0	6
13.0101	Education General	24	0	0	0	0	4	0	0	0	24	0	0	0
13.1301	Ag Education	25	0	0	0	0	3	0	0	0	25	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 12

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
14.0301	Ag Engineering	33	0	1	0	1	13	0	0	0	32	0	1	0
15.0602	Food Proc Technology	16	0	1	0	2	7	0	0	0	22	0	1	0
15.0802	Ag Equip Tech	7	0	0	0	0	0	0	0	0	24	0	0	0
17.0501	Animal Technology	49	1	0	0	2	11	2	0	0	56	1	0	0
17.0512	Vet Assisting	26	13	0	0	0	15	0	0	0	26	9	0	0
18.2401	Veterinary Medicine	88	7	0	0	1	26	4	0	0	84	4	0	0
31.0201	Outdoor Rec	4	0	4	0	0	0	0	0	0	0	0	4	0
31.0301	Parks & Rec Mgt	12	0	0	0	0	0	0	0	0	5	0	0	0
48.0402	Meat Cutting	45	0	3	0	0	3	0	0	0	47	0	3	0
49.0303	Comm Fishing Op	39	0	0	0	0	0	0	0	0	39	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 13

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal		FAMILY	Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T	LABOR	F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	155	22	7	3	0	10	4	7	0	140	14	7	3
01.0205	Ag Struct/Equip/Fac	92	0	0	0	0	0	0	0	0	92	0	0	0
01.0301	Ag Production Gen	5883	N/A	9705	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01.0302	Animal Production	3	0	0	0	0	0	0	0	0	3	0	0	0
01.0305	Game Farm Management	2	0	6	0	2	0	0	2	0	2	0	6	0
01.0401	Ag Prod & Proc, Genl	1	0	0	0	0	0	0	0	0	1	0	0	0
01.0402	Food Products	355	139	23	19	6	2	0	0	0	341	106	17	19
01.0502	Ag Services	50	12	9	4	2	6	3	0	0	47	12	9	4
01.0503	Ag Supp Marketing	356	15	276	1	0	17	0	9	0	361	15	284	1
01.0504	Animal Grooming	2	6	0	2	0	0	0	0	0	2	6	0	2
01.0601	Horticulture, Genl	31	0	78	4	0	6	0	6	0	38	0	78	4
01.0602	Arboriculture	9	0	0	28	0	0	0	0	0	9	0	0	14
01.0604	Greenhouse Op & Mgt	16	0	0	0	2	0	0	0	0	20	0	0	0
01.0605	Landscaping	38	0	47	7	10	12	0	21	3	38	0	56	3
01.0607	Turf Management	14	0	5	12	0	0	0	0	0	17	0	5	12
02.0302	Dairy Processing	179	3	132	0	0	92	0	127	0	236	3	105	0
02.0303	Food Distribution	1	0	0	0	0	0	0	0	0	1	0	0	0
02.0306	Food Technology	2	0	0	0	0	1	0	0	0	3	0	0	0
03.0402	Forest Production	4	0	0	8	0	4	0	0	1	6	0	0	10
03.0403	Forest Products Util	440	0	0	0	13	22	0	0	0	532	0	0	0
03.0405	Logging	30	5	0	10	0	5	0	0	0	30	5	0	15
03.0506	Forest Management	5	0	0	0	0	6	0	0	0	7	0	0	0
04.0601	Landscape Archit	0	0	2	0	0	0	0	0	0	0	0	2	0
06.0301	Banking and Finance	9	0	0	0	0	1	0	0	0	10	0	0	0
06.0801	Insur & Risk Mgt	2	0	0	0	0	6	0	0	0	9	0	0	0
08.0502	Farm & Gdn Supp Mkt	142	0	6	13	11	14	0	0	0	146	0	9	15
08.0503	Floristry	69	22	9	16	9	6	0	9	0	47	22	13	22
08.0605	Whsl Food Marketing	19	0	0	0	0	0	0	0	0	21	0	0	0
08.1202	Ag Impl & Mach Mkt	108	3	0	0	0	19	0	0	0	129	3	0	0
13.0101	Education General	54	0	0	0	0	6	0	0	0	34	0	0	0
13.0406	Higher Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.0407	Comm Col Ed Admin	1	0	0	0	0	0	0	0	0	1	0	0	0
13.1301	Ag Education	28	1	0	0	0	1	0	0	0	28	1	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: EDUCATIONAL PLANNING REGION 13

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
14.0301	Ag Engineering	25	0	0	0	0	0	0	0	0	25	0	0	0
15.0602	Food Proc Technology	19	2	0	0	0	5	0	0	0	21	2	0	1
15.0802	Ag Equip Tech	1	0	0	0	0	0	0	0	0	2	0	0	0
17.0501	Animal Technology	12	2	0	0	2	6	2	0	0	9	2	0	0
17.0512	Vet Assisting	20	9	0	2	3	5	5	0	0	23	8	0	2
18.2401	Veterinary Medicine	35	3	0	0	0	9	2	0	0	32	3	0	0
31.0201	Outdoor Rec	11	2	0	0	0	0	0	0	0	11	2	0	0
48.0402	Meat Cutting	33	0	0	0	0	0	0	0	0	38	0	0	0

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: STATE-WIDE TOTALS

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.0204	Ag Power Machinery	2212	63	87	89	0	376	8	53	60	2310	67	171	165
01.0205	Ag Struct/Equip/Fac	230	12	11	5	0	29	5	6	0	283	12	18	12
01.0301	Ag Production Gen	71126	0	91346	0	0	0	0	50	0	8	0	55	0
01.0302	Animal Production	2016	497	66	790	72	227	45	27	15	2185	520	64	789
01.0304	Crop Production	132	14	22	9	0	5	2	0	0	137	12	22	9
01.0305	Game Farm Management	34	12	21	16	9	5	0	7	5	20	12	25	14
01.0399	Ag Production, Other	43	8	63	9	17	11	0	0	5	42	8	60	12
01.0401	Ag Prod & Proc, Genl	380	180	13	53	36	3	0	0	25	368	155	4	51
01.0402	Food Products	9966	715	597	291	212	405	83	189	10	9968	704	602	295
01.0403	Nonfood Products	21	0	0	0	4	0	0	0	0	21	0	0	0
01.0502	Ag Services	2316	571	411	822	34	198	94	10	52	2349	559	437	852
01.0503	Ag Supp Marketing	6624	1373	308	743	25	118	0	9	4	6452	1357	310	726
01.0504	Animal Grooming	452	62	0	126	0	3	0	0	0	458	59	0	126
01.0505	Animal Training	442	29	0	10	16	67	0	0	0	378	28	0	10
01.0506	Horseshoeing	23	11	0	0	0	36	0	0	0	28	11	0	0
01.0599	Ag Serv & Supp Other	495	0	60	0	0	26	0	10	0	521	0	60	0
01.0601	Horticulture, Genl	4211	400	2633	3036	45	1262	140	542	1007	4247	486	2731	3124
01.0602	Arboriculture	450	30	124	63	12	54	22	62	11	508	26	150	54
01.0604	Greenhouse Op & Mgt	3060	233	595	285	42	454	28	129	55	3292	194	596	315
01.0605	Landscaping	6170	810	4031	2155	330	2430	571	1540	1103	6843	916	4413	2235
01.0606	Nursery Op & Mgt	19	0	0	0	0	13	0	0	0	33	0	0	6
01.0607	Turf Management	182	16	172	108	1	25	8	53	23	189	16	184	100
02.0101	Ag Sciences, Genl	418	20	0	0	0	40	2	0	0	418	20	0	0
02.0301	Food Sciences, Genl	20	0	0	0	0	0	0	0	0	20	0	0	0
02.0302	Dairy Processing	1859	72	191	49	5	249	1	170	17	1993	72	176	57
02.0306	Food Technology	54	5	0	0	7	2	0	0	0	55	3	0	0
02.0401	Plant Sciences, Genl	19	0	0	0	0	3	0	0	0	21	0	0	0
02.0404	Ornamental Hortic	12	0	0	0	0	0	0	0	0	12	0	0	0
02.0503	Soil Conservation	22	2	0	0	0	0	0	0	0	22	2	0	0
03.0301	Fishing & Fisheries	9404	2000	0	0	0	0	0	0	0	9404	2000	0	0
03.0401	Forest Prod/Proc Gen	35	5	0	0	0	4	1	0	0	35	5	0	0
03.0402	Forest Production	34	0	0	11	0	9	0	0	1	37	0	0	13
03.0403	Forest Products Util	1501	63	43	19	53	89	8	6	0	1632	60	43	19
03.0405	Logging	1342	104	37	35	40	221	21	0	0	1399	88	35	27
03.0406	Pulp & Paper Prod	16	0	0	0	0	16	0	0	0	16	0	0	0
03.0506	Forest Management	69	10	0	9	5	23	0	0	9	79	10	0	9

SUMMARY TABLE: EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE: STATE-WIDE TOTALS

INSTRUCTIONAL PROGRAMS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
Code	Title	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
04.0601	Landscape Archit	106	8	21	6	0	27	6	7	7	184	9	14	6
06.0301	Banking and Finance	183	0	0	0	0	11	0	0	0	156	0	0	0
06.0801	Insur & Risk Mgt	230	202	0	0	0	33	13	0	0	291	218	0	4
08.0501	Florist,Fm & Gdn Mkt	130	62	125	62	0	26	0	25	0	154	75	187	75
08.0502	Farm & Gdn Supp Mkt	3452	584	404	615	180	525	82	160	297	3495	623	506	737
08.0503	Floristry	5389	1194	667	1346	389	1014	201	217	546	5222	1167	660	1480
08.0605	Whsl Food Marketing	2902	159	1301	130	79	153	29	1027	24	2668	179	1258	147
08.1202	Ag Impl & Mach Mkt	1503	47	14	52	17	211	7	11	29	1528	44	11	83
09.0401	Journalism	30	13	0	0	0	5	0	0	0	33	16	0	0
13.0101	Education General	1482	23	0	0	0	97	1	0	0	1482	23	0	0
13.0401	Ed Admin, General	32	0	0	0	0	0	0	0	0	32	0	0	0
13.0406	Higher Ed Admin	55	0	0	0	0	4	0	0	0	55	0	0	0
13.0407	Comm Col Ed Admin	12	0	0	0	0	0	0	0	0	12	0	0	0
13.1301	Ag Education	388	12	0	0	0	44	1	0	0	387	10	0	0
14.0301	Ag Engineering	405	0	30	0	14	84	0	0	0	454	0	22	4
15.0602	Food Proc Technology	339	5	2	2	6	17	0	1	0	273	4	2	3
15.0802	Ag Equip Tech	19	0	1	0	0	0	0	0	0	35	0	1	0
17.0501	Animal Technology	777	76	5	0	26	179	17	3	2	590	69	9	4
17.0511	Veterinarian Aide	8	2	0	0	0	3	1	0	0	5	1	0	0
17.0512	Vet Assisting	776	308	60	64	17	166	68	11	20	833	284	61	71
18.2301	Toxicology(Clinical)	14	0	0	0	0	0	0	0	0	14	0	0	0
18.2401	Veterinary Medicine	1279	89	25	24	29	275	27	8	10	1319	78	32	16
31.0201	Outdoor Rec	73	2	28	4	16	10	0	2	1	71	2	28	4
31.0301	Parks & Rec Mgt	126	0	2	0	0	13	0	1	0	114	0	2	0
48.0402	Meat Cutting	1205	43	147	13	72	166	12	10	0	1115	16	147	22
49.0303	Comm Fishing Op	94	0	0	0	0	0	0	0	0	94	0	0	0

APPENDIX D

Samples of Tables 1 through 6

TABLE 1: DEMAND DATA FOR JOB TITLES BY INSTRUCTIONAL PROGRAM CODES AND BY SIC CODES

What This Table Contains

Table 1 consists of two types of listings:

(1) A computer printout of all demand data on job titles organized by instructional program codes, with the exception of 01.0101 (Agricultural Business and Management, General.) Job titles assigned to 01.0101 were also assigned to a program code relating directly to a specialty such as Floristry. The 01.0101 code was omitted from this listing to avoid duplicate counting. In every other case, all job titles are counted once by DOT number and SIC code. These two codes define a unique, basic occupational unit by which data were aggregated. Thus, one DOT nine-digit number may be associated with a number of SIC codes. The job titles under the DOT number are in SIC code order. If there are two or more job titles associated with an SIC code for a given DOT number these are in aphabetical order.

All the DOT numbers under a six-digit instructional program code are in numerical order. Demand data are presented for each of the 13 educational planning regions as well as statewide. The reader cannot determine from this table what the demand data totals are for business areas, since job titles in the same SIC may have been assigned to diferent instructional program codes. However, Table 6 presents demand data by SIC codes for each of the 13 regions and for the state.

The data in Table 1 have been converted to percentages in Table 5. In addition, table 5 lists totals and percentages at the four-digit and two-digit program code levels.

(2) This second printout contains demand data for instructional program code 01.0101 (Agricultural Business and Management, General.) The data are presented for each of the 13 educational planning regions and for the whole state. It must be remembered that the totals in this section are duplicate counts. This section is only a regrouping of information already presented in the listing above.

Using This Table

This table is a detailed listing of the summary tables giving totals only by program codes. In this table, totals are given for each of 13 cells. No other totals are presented within a row. The cells include total numbers of positions for 1980 including unpaid family labor; total number of openings for 1980; and total number of anticipated positions for 1982. These totals are further differentiated by year-round and seasonal, for which data were collected as either full-time (F-T) or part-time (P-T).

There were only 22 columns available for listing job titles. In most cases the computer continued the title in the next row. However, in a few cases, where the job title was longer than 22 columns in the second row, the job title was truncated. If the reader wants to know the full title for a job this can be found in Table 3, the Alphabetical Listing of Job Titles.

The SIC code is listed to the right of the job title. If the job title is two rows long, the SIC code is listed in the second row.

An asterisk (*) is placed to the left of those job titles that were added by employers to survey returns.

"Dummy" numbers are included in this listing. A dummy number was developed for any job title for which a DOT (4th edition) nine-digit number could not be found. The first three digits of the dummy number were taken from the DOT occupational groups. The second three numbers are "999" indicating dummy status, and the last three are a sequence number which uniquely identifies the dummy number.

EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE
TABLE 1: Demand Data for Job Titles by Instructional Programs and SIC Codes

*--title added by employer

STATE-WIDE TOTALS		1980									1982			
		TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
		Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
		F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
01.C204 Ag Power Machinery		2212	63	87	89	0	376	8	53	60	2310	67	171	165
DOT #: 409999015		18	0	0	6	0	3	0	0	6	21	0	0	0
JOB TITLE	SIC #													
*Agriculture & Turf Mechanic	5261	18	0	0	6	0	3	0	0	6	21	0	0	0
DOT #: 529999015		2	0	0	0	0	0	0	0	0	2	0	0	0
JOB TITLE	SIC #													
*Maintenance Supervisor	2024	2	0	0	0	0	0	0	0	0	2	0	0	0
DOT #: 620261010		4	3	0	0	0	0	0	0	0	1	0	0	0
JOB TITLE	SIC #													
*Truck Mechanic	4212	4	3	0	0	0	0	0	0	0	1	0	0	0
DOT #: 620261022		5	0	0	0	0	0	0	0	0	5	0	0	0
JOB TITLE	SIC #													
*Mechanic	2411	5	0	0	0	0	0	0	0	0	5	0	0	0
DOT #: 620281058		19	0	0	0	0	0	0	0	0	4	0	0	0
JOB TITLE	SIC #													
*Tractor Mechanic	5083	19	0	0	0	0	0	0	0	0	4	0	0	0
DOT #: 624131010		3	0	0	0	0	3	0	0	0	3	0	0	0
JOB TITLE	SIC #													
*Machinery Maintenance Foreman	5148	3	0	0	0	0	3	0	0	0	3	0	0	0
DOT #: 624281010		1452	32	2[illegible]	38	0	230	8	19	29	1570	29	73	81
JOB TITLE	SIC #													
*Mechanic	0181	3	0	0	0	0	0	0	0	0	3	0	0	0
*Tractor Mechanic	0182	6	0	0	0	0	0	0	0	0	6	0	0	0
*Mechanic	0781	6	0	0	0	0	0	0	0	0	6	0	0	0
*Farm Equipment Repairer	0782	10	0	0	0	0	16	0	0	0	16	0	0	0
*Landscape Mechanic														
*Agricultural Equipment Mechanic	5083	618	14	0	13	0	91	8	4	4	697	14	13	34
*Agricultural Mechanic														
*Equipment Mechanic														
*Farm & Garden Equipment Mechanic														
*Farm & Garden Tractor Equip Serv Techn														
*Farm Equipment Mechanic														
*Farm Equipment Serviceman														
*General Mechanic														
*Machinery Mechanic														
*Mechanic														

TABLE 2: LIST OF JOB TITLES BY DOT #S
WITH PROGRAM AND SIC CODES

What This Table Contains

There are three types of lists in this table:

(1) A list of all the job titles for which demand data were collected, in DOT number order. There are other job titles used in New York State but they were not included in the Cornell study and thus are not reflected in this list. The program codes listed with the DOT numbers do not include 01.0101 (See #3 below).

(2) A subset of the list above containing only "dummy" DOT numbers. Dummy numbers can be identified by the "999" as its second three digits. If no DOT number could be found for a job title, the title was assigned a nine-digit dummy DOT number. The first three digits of the dummy number were taken from DOT occupational groups. The last three digits have no significance other than sequential ordering.

Titles with dummy numbers were located in other state studies or were added to the survey forms by responding employers.

(3) A list of all the job titles which were assigned to instructional program code 01.0101 (Agricultural Business and Management, General.) These job titles were also assigned to a program code relating directly to a specialty such as Floristry. Job titles in this list all represent upper management positions including owner/operators.

Using This Table

Tables 2, 3 and 4 contain the same information organized in three different ways for easy reference. Each job title is linked to a DOT number, an instructional program code and an SIC code. However, the basic occupational unit is the DOT number and SIC code. An instructional program code was assigned to the basic occupational unit. A DOT number may be linked with a number of job titles which are alternatives for each other but may vary slightly in type of work performed. One or more job titles occur within an SIC. These are listed alphabetically under the DOT number. If a job title has more than one instructional program code listed with it, these are in numerical order. Each instructional program code has all the SIC codes associated with it to its right.

Table 2 is in DOT number order and is useful if the reader knows the DOT number but wants to know what SIC codes were used for collecting employment demand data for the given DOT number; or wants to know what job titles are used for the given DOT number in New York State.

The dummy number listing is useful if the reader wants to know what kinds of job titles are not yet in the DOT. A review of the occupational groups reflected in the first three digits may be an indicator of an emerging occupational group of jobs.

The third listing will identify job titles which are primarily entrepreneurial, and an analysis of the first three digits of the DOT numbers may also indicate occupational groups which are likely to benefit from entrepreneurship programs.

EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE

Table 2: List of Job Titles by DOT Number and Program and SIC Codes

*--title added by employer

DOT #	JOB TITLE	PROGRAM CODES	SIC CODES		
001061018	Landscape Architect	04.0601	0781	0782	5261
011261014	*Draftsman	01.0605	0781		
012167014	*Quality Assistant Manager	02.0306	2021		
	*Quality Assurance Manager	02.0101	7397		
	*Quality Control Director	08.1202	3523		
		15.0602	2022		
	*Quality Control Lab Supervisor	02.0306	2011		
	*Quality Control Manager	15.0602	2024	5143	
	*Quality Control Supervisor	15.0602	2021	2022	2026
013061010	*Agricultural Engineer	14.0301	4931		
013061018	Agricultural Equipment Design Engineer	14.0301	3523		
013151010	Agricultural Equipment Sales Engineer	14.0301	3523	5083	
013999030	*Agricultural Representative	01.0602	4931		
	*Community & Farm Representative	01.0602	4931		
018167050	Farm Crew Leader	01.0301	0761		
022061010	Chemist	02.0101	7397		
		26.0201	7391		
	Environmental Chemist	03.0202	7397		
022137010	*Assistant Laboratory Director	02.0101	7397		
	*Chemical Analyst Supervisor	26.0201	7391		
	*Laboratory Coordinator	02.0101	7397		
	Laboratory Director	02.0101	7397		
	Laboratory Supervisor	02.0101	7397		
022261010	*Laboratory Technician	02.0101	7391	7397	
022999015	Dairy Chemist	02.0302	7397		
022999017	Crew Chief	01.0502	0751		
022999060	*Food Chemist	02.0301	7391		
024061034	*Hydrologist	02.0503	9512		
024999015	*Analyst	02.0101	7397		
025062010	*Meterorologist	02.9999	7397		
029261010	*Lab Technician	02.0306	2021		
	*Laboratory Technician	15.0602	2022		
029361014	Butter Tester	01.0402	2021		
	Cheese Laboratory Tester	15.0602	2022		
	Ice Cream Laboratory Tester	15.0602	2024		

TABLE 3: ALPHABETICAL LISTING OF JOB TITLES WITH DOT #S, AND PROGRAM AND SIC CODES

What This Table Contains

This table contains three types of lists:

(1) An alphabetical listing of all the job titles listed in Table 2, namely those job titles for which employment demand data were collected. Each job title has a DOT number linked with it. In some cases a job title may have more than one DOT number. For example, "Boner" is the name of the job title for DOT number 525381014 under SIC code 5147 (Meats and Meat Products, Wholesale). "Boner" happens to be an alternate title for a more specialized variant of an "All-Round Butcher" who works in the slaughtering and meat packing industry. "Boner" is also a job title under DOT number 525684010 which is linked with SIC code 2011 (Meat Packing Plants). "Boner," in this case, is a base title for persons preparing meat for packing and marketing. The distinction between the two DOT numbers seems to be the type of business employing the "boner."

(2) An alphabetical listing of all the dummy DOT numbers discussed in the Table 2 introduction.

(3) An alphabetical listing of all the job titles assigned to instructional program code 01.0101 (Agricultural Business and Management, General.)

Using the Table

Table 3 is useful if the reader knows the name of a job title and is interested in finding out what DOT numbers, SIC codes and program codes are associated with the job title. If there is more than one DOT number linked with a job title, these are in numerical order. If there is more than one program code linked with the DOT number, these are also in numerical order. The SIC codes are linked to the program codes and are also in numerical order.

EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE

TABLE 3: Alphabetical List of Job Titles with Program and SIC Codes

*--title added by employer

JOB TITLES	DOT #s	PROGRAM CODES	SIC CODES
Administrative Asst	189999811	08.0502	5261
* Advertising & Sales Promotion Manager	164117010	01.0402	5153
* Advertising Salesperson	254357014	09.0201	2721
* Ag & Turf Irrigation Technician	409399016	01.0607	5261
* Agric Equipment Partsman	279357062	08.0502	5083
* Agric Equipment Sales Rep & Manager	163167018	08.0502	5083
* Agric Market Service Manager	050999040	01.0605	4931
* Agric Milking Equip Installation & Serv	809381018	01.0205	5083
* Agric Parts & Hardware Salesperson	279357062	08.0502	5083
* Agric Products Res & Prod Developer	040999015	14.0301	3523
* Agricultural Advertiser	164999010	09.0201	2711
* Agricultural Assembly Technician	624281010	15.0802	3523
Agricultural Education Supervisor	099117026	13.1301	9411
* Agricultural Engineer	013061010	14.0301	4931
Agricultural Equipment Design Engineer	013061018	14.0301	3523
* Agricultural Equipment Installer	624381018	01.0204	5083
* Agricultural Equipment Mechanic	624281010	01.0204	5083
Agricultural Equipment Sales Engineer	013151010	14.0301	3523 5083
* Agricultural Equipment Sales Manager	163167018	08.0502	5083
* Agricultural Equipment Salesperson	272357014	08.0502	5083
* Agricultural Equipment Serviceman	624281010	01.0204	5083
* Agricultural Export Marketing Manager	053999016	14.0301	3523
Agricultural Journalist	131999020	09.0401	2721
Agricultural Loan Officer	186999040	06.0301	6131
* Agricultural Marketing Manager	050999015	14.0301	3523
* Agricultural Mechanic	624281010	01.0204	5083
* Agricultural Milking Equip Serviceman	809381018	01.0205	5083
* Agricultural Partman	279357062	08.0502	5083
* Agricultural Product Technician	040999016	15.0802	3523
* Agricultural Representative	013999030	01.0602	4931
Agricultural Sciences Technician	040999053	02.0101	8221
* Agriculture & Turf Mechanic	409999015	01.0204	5261
* Agriculture Research Manager	040999015	02.0101	7391
Agriculture Teacher	097227014	13.1301	8211
* Agronomist	040061010	02.0101	0782
		02.0401	5191
All Round Butcher	525381014	01.0402	2011
* All-Round Logger	454684018	03.0403	2421
		03.0405	2411
* Analyst	024999015	02.0101	7397
Animal Breeder	410161010	01.0302	0279
Animal Care Specialist	041999010	01.0502	5999
* Animal Care Technician	041999010	17.0501	8421
Animal Caretaker	410674010	01.0302	0279 8699
	412673010	01.0302	8421
* Animal Caretaker Apprentice	412999015	01.0302	8421
* Animal Caretaker Supervisor	410999015	01.0302	0279
Animal Farmer	410161010	01.0302	0279
Animal Feed Products Sales Rep	272357010	01.0402	5153
		01.0503	5191

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TABLE 4: LIST OF JOB TITLES BY SIC CODES, WITH PROGRAM CODES AND DOT #S

What This Table Contains

This table contains three types of lists:

(1) A list of all the job titles ordered by four-digit SIC codes. Under each SIC code the job titles are in DOT number order. If two or more job titles are linked to a DOT number they are in alphabetical order. Each DOT number has at least one program code associated with it. If there are two or more program codes, they are in numerical order. Program code order takes precedence over alphabetical order of job titles.

(2) This listing contains all the dummy DOT numbers used in the Cornell study ordered by four-digit SIC codes. This list is a subset of (1) above.

(3) A listing by four-digit SIC codes of all the job titles assigned to instructional program code 01.0101 (Agricultural Business and Management, General.)

Using This Table

Table 4 permits the reader to locate all the job titles used in a given SIC. The DOT numbers and instructional program codes are also listed. Therefore, the reader can tell at a glance just which program codes were assigned to SICs.

When using this table it may be helpful to also consult Table 7, a List of SIC Codes Used in the Study. Table 7 will contain the names of the business areas that were included in the study for a given SIC code.

Table 4: List of Job Titles by SIC # with Program Codes and DOT #s

*--title added by employer

--SIC # 0102- Agricultural Production (Crop & Livestock)------------------------

DOT #	JOB TITLE	PROGRAM CODE
180999016	Owner/Operator	01.0301
400999015	Hired Farm Worker	01.0301

--SIC # 0181- Ornamental Floriculture and Nursery Products---------------------

DOT #	JOB TITLE	PROGRAM CODE
040361014	*Research & Development Seed Analyst	02.0404
142081010	*Floral Designer	08.0503
163167018	*Sales Manager	01.0604
180167042	Greenhouse Manager	01.0604
	Supervisor/Manager	01.0604
180999016	Owner/Operator	01.0604
269362010	*Office Manager	01.0604
272357022	*Store Salesperson	01.0604
405687014	*Annual Planter	01.0601
	*Farm Worker	01.0601
	*Grader	01.0601
	Laborer	01.0601
	*Nurseryman	01.0601
405999015	*Greenhouse Operator/Grower	01.0604
405999020	Foreman	01.0604
405999030	Equipment Operator	01.0604
405999040	Salesperson	01.0604
405999080	*Grower	01.0604
405999130	*Field Foreman	01.0604
406361010	Plant Propagator	01.0604
406684010	*Cemetery Worker	01.0605
406999100	*Landscape Foreman	01.0605
408161010	*Landscape Gardener	01.0605
	*Landscape Worker	01.0605
	*Landscaper	01.0605
408664660	*Maintenance Technician	01.0604
408684014	Pesticide Applicator	01.0604
408687014	*Landscape Laborer	01.0605
624281010	*Mechanic	01.0204
625281034	*Mechanic	01.0204

--SIC # 0182- Food Crops Grown Under Cover--

DOT #	JOB TITLE	PROGRAM CODE
180167022	*Crew Leader	01.0304
180999010	*Farm Manager	01.0304
180999016	Owner/Operator	01.0304
405131010	Mushroom Growing Supervisor	01.0304

Table 4: List of Job Titles by SIC # with Program Codes and DOT #s
*--title added by employer

405687014	Mushroom Laborer	01.0304
	*Nursery Laborer	01.0304
405999010	*Mushroom Picker	01.0304
408684014	*Pesticide Applicator	01.0304
409131010	*Harvesting Supervisor	01.0304
529999020	*Plant Supervisor	01.0304
529999030	*Lab Supervisor	02.0306
529999050	*Lab Technician	02.0306
624281010	*Tractor Mechanic	01.0204
919664010	*Manure Hauler	01.0304
920137010	*Packing Supervisor	01.0304
920687134	Mushroom Packer	01.0304

--SIC # 0259- Poultry and Eggs, Not Elsewhere Classified----------------------

DOT #	JOB TITLE	PROGRAM CODE
040999060	Avian Specialist	01.0305
180999016	*Owner/Operator	01.0305
410674010	*Dog Handler	01.0505
412131010	Game Farm Supervisor	01.0305
412161010	Game Bird Farmer	01.0305
412684010	Game Farm Helper	01.0305
	*Processing & Packaging Laborer	01.0305
412999015	*Fish & Wildlife Technician	01.0305

--SIC # 0279- Animal Specialties, Not Elsewhere Classified----------------------

DOT #	JOB TITLE	PROGRAM CODE
073101010	*Veterinarian	18.2401
180167030	*Fish Culturist	03.0302
	*Fish Hatchery Manager	03.0302
180999016	Owner/Operator	01.0302
410161010	Animal Breeder	01.0302
	Animal Farmer	01.0302
410674010	Animal Caretaker	01.0302
410999015	*Animal Caretaker Supervisor	01.0302
413161010	Beekeeper	01.0399
413999017	*Beekeeper Helper	01.0302
522685070	*Honey Processor	01.0402

--SIC # 0711- Soil Preparation Services--

DOT #	JOB TITLE	PROGRAM CODE
180999016	Owner/Operator	01.0502
409999020	Supervisor/Manager	01.0502

EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE
TABLE 5: Demand Data Percentages for Job Titles by Instructional Programs

STATE-WIDE TOTALS	1980									1982			
	TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
	Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
PROGRAM CODE:													
01. AGRIBUSINESS AND AGRIC PROD	110604	5036	100560	8610	855	5747	1006	2687	2375	40640	5142	9902	8895
% OF ALL PROG CODES - STATE(SW):	75.5	49.6	97	77.9	47.2	60.7	66.9	61.8	71.2	53.2	50.2	75.6	76.2
01.02 AGRICULTURAL MECHANICS	2442	75	98	94	0	405	13	59	60	2593	79	189	177
% OF 2-DIGIT CODE ABOVE(SW):	2.2	1.5	0.1	1.1	0	7	1.3	2.2	2.5	6.4	1.5	1.9	2
01.0204 Ag Power Machinery	2212	63	87	89	0	376	8	53	60	2310	67	171	165
% OF 4-DIGIT CODE ABOVE(SW):	90.6	84	88.8	94.7	0	92.8	61.5	89.8	100	89.1	84.8	90.5	93.2
DOT #: 409999015	18	0	0	6	0	3	0	0	6	21	0	0	0
% OF 6-DIGIT CODE ABOVE(SW):	0.8	0	0	6.7	0	0.8	0	0	10	0.9	0	0	0
DOT #: 529999015	2	0	0	0	0	0	0	0	0	2	0	0	0
% OF 6-DIGIT CODE ABOVE(SW):	0.1	0	0	0	0	0	0	0	0	0.1	0	0	0
DOT #: 620261010	4	3	0	0	0	0	0	0	0	1	0	0	0
% OF 6-DIGIT CODE ABOVE(SW):	0.2	4.8	0	0	0	0	0	0	0	0	0	0	0
DOT #: 620261022	5	0	0	0	0	0	0	0	0	5	0	0	0
% OF 6-DIGIT CODE ABOVE(SW):	0.2	0	0	0	0	0	0	0	0	0.2	0	0	0
DOT #: 620281058	19	0	0	0	0	0	0	0	0	4	0	0	0
% OF 6-DIGIT CODE ABOVE(SW):	0.9	0	0	0	0	0	0	0	0	0.2	0	0	0
DOT #: 624131010	3	0	0	0	0	3	0	0	0	3	0	0	0
% OF 6-DIGIT CODE ABOVE(SW):	0.1	0	0	0	0	0.8	0	0	0	0.1	0	0	0
DOT #: 624281010	1452	32	25	38	0	230	8	19	29	1570	29	73	81
% OF 6-DIGIT CODE ABOVE(SW):	65.6	50.8	28.7	42.7	0	61.2	100	35.8	48.3	68	43.3	42.7	49.1
DOT #: 624281014	0	5	0	0	0	24	0	0	0	0	5	0	0
% OF 6-DIGIT CODE ABOVE(SW):	0	7.9	0	0	0	6.4	0	0	0	0	7.5	0	0
DOT #: 624381018	47	0	45	34	0	9	0	23	18	85	0	77	52
% OF 6-DIGIT CODE ABOVE(SW):	2.1	0	51.7	38.2	0	2.4	0	43.4	30	3.7	0	45	31.5
DOT #: 625281034	229	20	10	7	0	31	0	4	7	225	23	14	29
% OF 6-DIGIT CODE ABOVE(SW):	10.4	31.7	11.5	7.9	0	8.2	0	7.5	11.7	9.7	34.3	8.2	17.6
DOT #: 629999060	433	3	7	4	0	76	0	7	0	394	10	7	3
% OF 6-DIGIT CODE ABOVE(SW):	19.6	4.8	8	4.5	0	20.2	0	13.2	0	17.1	14.9	4.1	1.8
01.0205 Ag Struct/Equip/Fac	230	12	11	5	0	29	5	6	0	283	12	18	12
% OF 4-DIGIT CODE ABOVE(SW):	9.4	16	11.2	5.3	0	7.2	38.5	10.2	0	10.9	15.2	9.5	6.8
DOT #: 180999015	5	0	0	0	0	0	0	0	0	5	0	0	0
% OF 6-DIGIT CODE ABOVE(SW):	2.2	0	0	0	0	0	0	0	0	1.8	0	0	0

EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE
TABLE 6: Demand Data for Job Titles by SIC Codes

*--title added by employer

STATE-WIDE TOTALS	1980									1982			
	TOTAL # OF POSITIONS				UNPAID FAMILY LABOR	TOTAL # OF OPENINGS				TOTAL # OF POSITIONS			
	Yr. Round		Seasonal			Yr. Round		Seasonal		Yr. Round		Seasonal	
	F-T	P-T	F-T	P-T		F-T	P-T	F-T	P-T	F-T	P-T	F-T	P-T
SIC #: 0102	71116	0	91296	0	0	0	0	0	0	0	0	0	0
DOT #: 180999016 JOB TITLE Owner/Operator	43065	0	0	0	0	0	0	0	0	0	0	0	0
DOT #: 400999015 JOB TITLE Hired Farm Worker	28051	0	91296	0	0	0	0	0	0	0	0	0	0
SIC #: 0181	5512	402	2845	2863	34	786	73	522	496	5234	435	2902	2869
DOT #: 040361014 JOB TITLE *Research & Development Seed Analyst	4	0	0	0	0	0	0	0	0	4	0	0	0
DOT #: 142081010 JOB TITLE *Floral Designer	41	2	0	109	0	36	0	0	71	41	2	0	109
DOT #: 163167018 JOB TITLE *Sales Manager	4	0	0	0	0	0	0	0	0	4	0	0	0
DOT #: 180167042 JOB TITLE Greenhouse Manager Supervisor/Manager	579	7	57	13	0	63	7	0	0	593	7	40	9
DOT #: 180999016 JOB TITLE Owner/Operator	14	0	0	0	0	0	0	0	0	14	0	0	0
DOT #: 269362010 JOB TITLE *Office Manager	7	0	0	7	0	7	0	0	7	7	0	0	7
DOT #: 272357022 JOB TITLE *Store Salesperson	16	0	0	6	0	0	0	0	0	16	0	0	6
DOT #: 405687014 JOB TITLE *Annual Planter *Farm Worker *Grader Laborer *Nurseryman	2726	231	2194	2407	5	433	45	401	299	2410	248	2254	2383

APPENDIX E

Table 7

EMPLOYMENT DEMAND DATA FOR AGRICULTURE AND AGRIBUSINESS IN NEW YORK STATE

TABLE 7: LIST OF SIC CODES AND TITLES USED IN STUDY

* = SIC code is a "dummy" number combining two groups: 01 and 02

SIC CODE	SIC TITLE	BUSINESS AREAS (Number is 5th digit used with SIC codes)
*0102	Agricultural Production (Crop & Livestock)	
0181	Ornamental Floriculture and Nursery Products	(1) Greenhouse Production, Wholesale (2) Nursery Production, Wholesale
0182	Food Crops Grown Under Cover	(1) Mushrooms
0259	Poultry and Eggs, N.E.C.	(2) Game Farms
0279	Animal Specialties, N.E.C.	(3) Bee Farms (4) Fish Farms (6) Lab Animal Farms
0711	Soil Preparation Services	
0721	Crop Planting, Cultivating, and Protecting	
0723	Crop Preparation Services for Market	
0741	Veterinary Services for Livestock	
0742	Veterinary Services for Animal Specialties	
0751	Livestock Services, Except Animal Specialties	(1) Artificial Inseminators (2)Milk Testing/DHIA (4) Sheep Shearing
0752	Animal Specialty Services	(1) Boarding Kennels (2) Riding Academies (4) Dog Grooming (6) Pet Training
0761	Farm Labor Contractors & Crew Leaders	
0781	Landscape Counseling & Planning	
0782	Lawn & Garden Services	(1) Landscape Maintenance Service (2) Landscape Contractors (3) Lawn Services
0783	Ornamental Shrub & Tree Services	(1) Arborist Services (2) Landscape Contractors (3) Shrub & Tree Spraying
0851	Forestry Services	
0912	Finfish (Vessels)	
0913	Shellfish	
2011	Meat Packing Plants	
2016	Poultry Dressing Plants	
2021	Creamery Butter	
2022	Cheese, Natural & Processed	
2023	Condensed & Evaporated Milk	
2024	Ice Cream & Frozen Desserts	
2026	Fluid Milk	
2082	Malt Beverages (Breweries)	
2084	Wineries	
2411	Logging Camps & Logging Contractors	
2421	Sawing Mills & Planing Mills, General	
2426	Hardwood Dimension & Flooring Mills	
2431	Millwork, Veneer, Plywood & Structural Wood Members	
2721	Periodical Publishing (Agriculture/Agribusiness)	
3523	Farm Machinery & Equipment Manufacturing	
4212	Trucking	(1) Milk Haulers
4931	Electric & Other Services Combined	
5083	Farm & Garden Machinery & Equipment	
5143	Wholesale Dairy Products	
5144	Wholesale Poultry & Poultry Products	
5147	Wholesale Meat & Meat Products	
5148	Wholesale Fresh Fruits & Vegetables	
5153	Wholesale Grain	
5154	Wholesale Livestock (Auction Markets)	
5159	Wholesale Farm Products or Materials, N.E.C.	(1) Chicks (3) Horses
5191	Wholesale Farm Supplies	

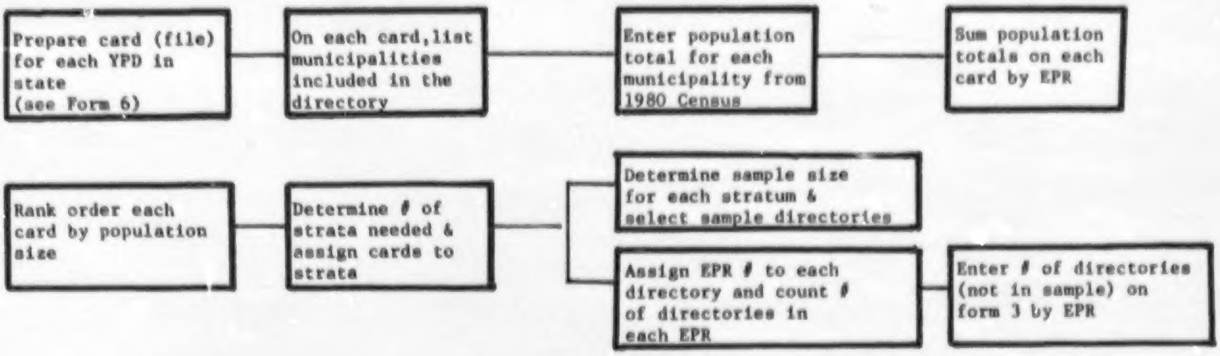
SIC CODE	SIC TITLE	BUSINESS AREAS (Number is 5th digit used with SIC codes)
5261	Retail Nurseries, Lawn & Garden Stores	
5422	Retail Freezer & Locker Meat Provisioners	
5992	Retail Florists	
5999	Miscellaneous Retail Stores, N.E.C.	(1) Pet Shops
6131	Agricultural Credit Institutions	
6221	Commodity Contracts Brokers and Dealers	
6331	Fire, Marine & Casualty Insurance	
7391	Research & Development Labs, Commercial	(1) Agricultural Research (2) Chemical Labs (3) Food Research (4) Agricultural R & D
7393	Detective & Protective Services	(1) Guard Dogs
7699	Repair Shops & Related Services, N.E.C.	(1) Retail Farm Machinery Dealership
7948	Racing, Including Track Operations	(1) Flat Racing, Including Track Op. (2) Breeding & Training of Thoroughbreds (3) Harness Racing, Including Track (4) Breeding & Training of Standardbreds
7992	Public Golf Courses	
7999	Amusement & Recreational Services, N.E.C.	(1) Public Parks (8) Riding Academies
8211	Elementary & Secondary Schools	
8221	Colleges, Universities & Professional Schools	
8222	Junior Colleges and Technical Institutes	
8421	Arboreta, Botanical, & Zoological Gardens	(1) Gardens: Arboreta & Botanical (2) Public Zoos
8699	Membership Organizations, N.E.C.	(1) Humane Societies
9411	Administration of Educational Programs	
9512	Conservation Agencies	
9641	Regulation of Agricultural Marketing & Commodities	(1) Ag Extension Services (2) Dept of Ag & Markets (3) USDA

APPENDIX F

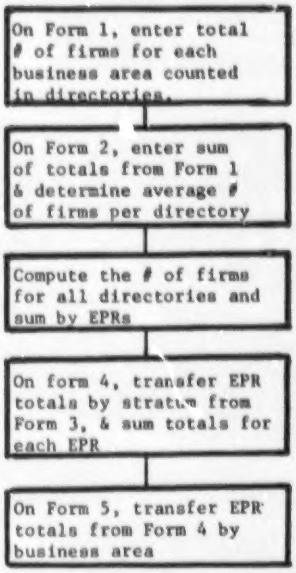
YELLOW PAGES SURVEY PROCEDURES

YELLOW PAGES DIRECTORY PROCEDURES

I. DEFINING UNIVERSE AND SAMPLE SIZES


Prepare card (file) for each YPD in state (see Form 6)
On each card, list municipalities included in the directory
Enter population total for each municipality from 1980 Census
Sum population totals on each card by EPR
Rank order each card by population size
Determine # of strata needed & assign cards to strata
Determine sample size for each stratum & select sample directories
Assign EPR # to each directory and count # of directories in each EPR
Enter # of directories (not in sample) on form 3 by EPR

II. DETERMINING THE NUMBER OF FIRMS IN EACH BUSINESS AREA BY EPR


On Form 1, enter total # of firms for each business area counted in directories.
On Form 2, enter sum of totals from Form 1 & determine average # of firms per directory
Compute the # of firms for all directories and sum by EPRs
On form 4, transfer EPR totals by stratum from Form 3, & sum totals for each EPR
On Form 5, transfer EPR totals from Form 4 by business area

(There were 42 directories in sample and 9 business areas were surveyed. Thus, 42 x 9 = 378 forms were completed.)

(One form was completed for each stratum; thus 7 forms were completed.)

(7 strata x 9 business areas = 56 forms completed.)

(One form per business area = 9 forms completed.)

(1 summary form completed of # of firms per EPR per business area)

YPD = Yellow Pages Directory
EPR = Educational Planning Region

Yellow Pages Survey Form 1

1) SIC code:________________ 2)Business area:________________________

3) Name of telephone directory:________________________ Stratum:________

4) Index title in directory: ________________________

____

5) Total # of firms:________________

6) Total # of firms with large ads:________________________

Yellow Pages Survey Form # 2

Stratum: 5

A: # of Directories in Stratum 15

B: # of Directories in Sample 5

	EPR	BOOK SAMPLED	Landscape Contract.	Retail Florist	Riding Academ.	Pet Shops	Tropical Fish	Pet Training	Guard Dogs	Pet Grooming	Boarding Kennels
	8	1	18	34	5	9	0	1	0	10	8
	12	2	22	27	1	3	0	0	1	5	9
	3	3	4	9	0	5	1	1	0	1	3
	3	4	15	13	2	4	0	1	0	1	1
	12	5	6	5	1	1	0	0	0	1	1
C:	TOTALS		65	88	9	22	1	3	1	25	25
D:	TOTAL # OF FIRMS IN ALL BOOKS: $\frac{C \times A}{B} = D$		195	264	18	66	3	9	3	75	75
E:	AVERAGE # OF FIRMS PER BOOK: $\frac{D}{A} = E$		13	18	1.2	4.4	.2	.6	.2	5	5
							4.6		.8		

STRATUM 5 Survey Form # 3

BUSINESS AREA: Landscape Contr. EDUCATIONAL PLANNING REGIONS

		1	2	3	4	5	6	7	8	9	10	11	12	13							
DIRECTORIES IN SAMPLE: # of firms in each directory	1								18												
	2												22								
	3			3																	
	4			15																	
	5												6								
Non-sample # of Directories Av./book = 13	2			13																	
				13																	
	2					13															
86						13															
	1.5							13													
								7													
	1								13												
	1.5									13											
										7											
	2													13							
														13							
TOTALS		0	0	44	0	26	0	20	31	20	0	0	28	26							

Yellow Pages Survey Form # 4

BUSINESS AREA: Retail Florists

STRATUM	EDUCATIONAL PLANNING REGIONS 1	2	3	4	5	6	7	8	9	10	11	12	13	STATE TOTAL
1	265	962												1227
2										105		133		238
3	402	66	202											670
4	57	45	124	226		45		45	45	45		45		677
5			58		36		27	52	27			32	36	268
6			154	58	19	58	58	77	58	96	19	19	19	635
7			82	74	53	41	49	41	66	29	37	25	45	542
TOTAL	724	1073	620	358	108	144	134	215	196	275	56	254	100	4257

Yellow Pages Survey Form #5

SUMMARY OF NUMBER OF FIRMS

	EDUCATIONAL PLANNING REGIONS													
Business Area	1	2	3	4	5	6	7	8	9	10	11	12	13	State Total
Landscape Contractors	749	232	678	338	90	155	139	215	191	287	53	179	85	3,391
Retail Florist	724	1073	685	382	116	168	150	248	220	316	64	262	108	4,524
Riding Academies	93	23	97	38	14	22	22	33	27	40	10	14	13	446
Pet Shops, including Tropical Fish	176	338	196	94	30	43	42	65	57	70	17	50	28	1,206
Pet Training, including Guard Dogs	79	118	80	38	8	17	13	23	19	26	5	17	7	450
Pet Grooming	204	218	211	111	30	51	46	75	63	103	17	75	28	1,232
Boarding Kennels	204	159	194	96	33	48	48	70	63	87	19	59	31	1,111

Yellow Pages Form # 6

Name of Directory: Buffalo

Area Code: 716

Municipalities:	Population Size
Buffalo	357,870
Blasdell	3,288
Kenmore	18,474
Lackawanna	22,701
Sloan	4,529
Amherst	108,706
Cheektowaga	109,442
Hamburg	53,270
Tonawanda	18,693
West Seneca	51,210
Total	758,765